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A FURTHER IMPROVED TECHNIQUE FOR THE CURE OF INGUINAL HERNIA

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The principles of the Bassini and the Halstead operations for the cure of inguinal hernia are still considered sound; however, there have been many modifications. Gallie and LeMesurier[1] and others have recommended the use of both living and dead fascial strips. Andrews[2] has presented an imbrication suture, and also a fascia-to-fascia method of repair[3]. Others have advocated various modifications of the original technique.

This multiplicity and variety of techniques, together with the use of various kinds of suture material, would tend to show that none of these operations is entirely satisfactory and that far too many recurrences are still taking place. Coley[4] has stated that recurrences should not occur in more than 5 per cent of the cases operated upon. Cattell and Anderson[5], reporting from the Lahey Clinic, give a recurrence rate of 6.7 per cent in unilateral, and 18.1 per cent in bilateral operations, and conclude that in bilateral hernia the two sides should not be operated on at the same time. Stanton[6] states: "Cases of indirect inguinal hernias operated upon by competent operators will, on the average, show 5 per cent recurrences at the end of the first year and 1 per cent per year additional thereafter." In direct hernia he considers a recurrence rate of 25 per cent over a five-year period a conservative estimate.

Burdick and others[7] of the staff of the Hospital for the Ruptured and Crippled report their experience in 1,485 operations upon 1,092 patients in which fascial sutures were used. They found that infections were more common with fascia than with other forms of suture material. The incidence of recurrences was 29 per cent. This high figure they attribute partly to weak spots caused by the introduction of the large fascia needle through the transversalis fascia and Poupart's ligament. Two patients died of hemorrhage caused by the needle. These authors state: "The fact that in many of our cases operated on more than once we were unable to find any evidence of previously used fascial sutures forces us to conclude that the theory of fascial sutures for hernia repair is based on an erroneous principle."

Andrews[8] states that about four million persons in the United States have hernia. This condition imposes a serious economic handicap on many of those affected, and every effort should be made to reduce the chances for recurrence.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Gallie, W. E. and LeMesurier, A. B.: Living Sutures in the Treatment of Hernia, Canad. M. A. J. 13:469 (July) 1923.
2. Andrews, E.: Andrews Imbrication Method for Inguinal Hernia, S. Clin. North America 14:919 (August) 1934.
3. Andrews, E.: A Method of Herniotomy Utilizing Only White Fascia, Ann. Surg. 80:225 (August) 1924.
4. Coley, B. L. and Burke, E.: The Operative Treatment of Hernia by Living Sutures, Am. J. Surg. 2:1 (January) 1927.
5. Cattell, R. B. and Anderson, C.: End Results in the Operative Treatment of Inguinal Hernia; A Report of 150 Cases at the Lahey Clinic, New England J. Med. 205:430 (August 27) 1931.
6. Stanton, E. A.: Hernia Problem, Indust. Med. 6:70 (February) 1937.
7. Burdick, C. G., Gillespie, D. H. M., and Higinbotham, N. L.: Fascial Suture Operations for Hernia, Ann. Surg. 106:333 (September) 1937.
8. Andrews, E.: Criteria of Operability of Inguinal Hernia, Internat. J. Med. and Surg. 44:453 (October) 1931.

In a consideration of the various operations for the cure of inguinal hernia, with their many modifications, it is agreed that the fundamental principles involved are: (1) high ligation of the sac (Sheer[9] emphasizes the importance of the sac thus: "When operating for the cure of inguinal hernia the motto must be the sac, the whole sac, and nothing but the sac."); (2) adequate reinforcement of the defective abdominal wall; (3) primary healing of the wound. It is well known that a large percentage of the ordinary hernias, especially those of children and young adults, can be cured by simply closing the sac without plastic disturbance of other tissues and without paying any special attention to the method of suturing the different structures; but for the unusual and difficult cases, including all direct hernias and recurrences, a more elaborate technique must be employed to get the maximum number of cures. It is possible to err either by doing too much, or by doing too little. Both these mistakes have their origin in an over-standardization of the method in common use. Other causes of failure to get a cure include lack of attention to asepsis and hemostasis.

The choice of an anesthetic is important. Many patients with hernia have chronic bronchitis with emphysema; they cough a good deal, and coughing is liable to burst catgut sutures. In these cases living or non-absorbable sutures are all the more necessary. Ether is objectionable in such cases. These patients do much better under local or spinal anesthesia.

Today probably 90 per cent of the operations for inguinal hernia include suturing the internal oblique and transversalis muscles, with their conjoined tendon, to Poupart's ligament, either in front of the cord or behind it. This procedure involves the suturing of muscles to fascia.

The experimental work of Seelig and Chouke[10] might tend to show that suturing of the internal oblique and transversalis muscles, with their conjoined tendon, to Poupart's ligament is futile and useless. Basing their opinion on experiments in which the muscles of the thigh of a dog were sutured to a fold of fascia lata—structures somewhat analogous to those used in the repair of inguinal hernia—they concluded that normal muscle would not unite with fascia.

Koontz[11] repeated the experimental work of Seelig and Chouke in the thigh of a dog and found that there is normally a layer of areolar tissue between the fascia lata and the underlying muscles. By simply suturing fascia to muscle Koontz found the result to be the same as that described by Seelig and Chouke, but when the layer of areolar tissue was first removed the muscle became firmly adherent to the fascia.

Before these reports appeared, I had been conducting some experimental work, using the structures in the inguinal region of the dog to determine the effect of trauma on the union of muscle and fascia. The experimental work consisted of dissecting the two inguinal regions of a dog. On one side the parts — muscle and fascia — were curetted, and in some instances narrow strips of muscle cut away in order to give a fresh surface, and the parts were then sutured, the raw surface of the ligament and the fibrous components of the muscle being brought into closer contact. On the other side simple suturing was done without curetting and with the least possible trauma; this side was to be used as a control. Catgut and silk were used as suture material. At the end of periods varying from one to six months the fields of operation were studied. In a comparison of the two sides it was found that in every instance fibrous union between the muscle and fascia was very weak where simple suturing had been done; while on the side in which the parts had been curetted or otherwise traumatized the union was much denser. Occasionally, in separating the muscle from the fascia, I found that bits of muscle remained attached to the fascia and came away with it in the dissection, so firmly was it attached. The density of union varied directly with the extent of the trauma and the time elapsing between the operation and the investigation. Catgut and silk seemed to be equally satisfactory as suture materials.

It has long been established that in the repair of muscle wounds the muscle fibers play little or no part, and that the repair is effected by a connective tissue stroma which forms a firm scar. Microscopically the scar is held in close and firm contact by innumer-

9. Sheer: Proceeds Royal Society of Medicine, Vol. 30:536, 1937.

10. Seelig, M. G., and Chouke, K. S.: A Fundamental Factor in Recurrence of Inguinal Hernia, Arch. Surg. 7:553 (November) 1923.

11. Koontz, A. R.: Muscle and Fascia Suture with Relation to Hernia Repair, Surg. Gynec. Obst. 42:222 (February) 1926.

able ramifications of the connective tissue stroma among the muscle fibers, making it difficult to separate the two kinds of tissue.

Clinically and experimentally, it has been demonstrated that fascia and muscle do unite; moreover, this experimental work shows that much denser union takes place after trauma. It has been known for a long time that in cases of non-union of fractures irritation or trauma to the fragments, obtained by rubbing the ends together, curetting, or drilling holes, increases the callus formation and thus in many cases causes union to take place. We are all familiar with the procedure of curetting or irritating chronic ulcers in order to stimulate the formation of granulation tissue, and it is common and sorrowful knowledge that irritating two layers of peritoneum causes the parts to become densely adherent. Irritation resulting from wearing a truss over a long period of time is thought to be a factor in producing adhesions which occasionally result in a cure. The injection treatment for hernia is based on irritation from a chemical. This principle of irritation, however, so far as I know, has never been applied to tissues in the operation for hernia, where success depends solely on the density of tissue union.

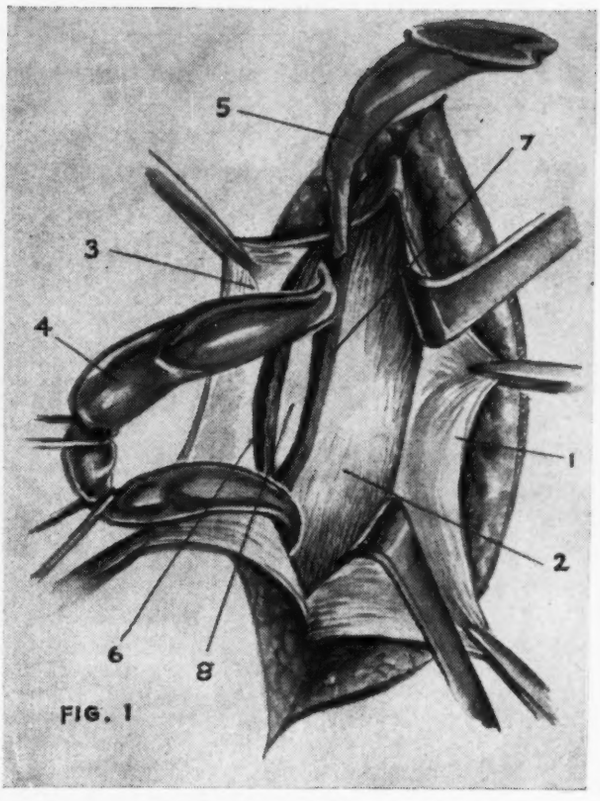

Fig. 1. 1. Inner leaf of the external oblique muscle widely retracted almost to the midline, exposing completely the anterior rectus sheath. 2. Anterior rectus sheath covering the rectus abdominis muscle. The sheath is exposed completely and is now ready for multiple nicks. 3. Retracted outer leaf of the external oblique muscle. 4. Spermatic cord retracted out of field. 5. Sac freed and opened. 6. Poupart's ligament, showing the traumatized area. 7. External oblique and transversalis muscles with their conjoined tendon, showing traumatized margin. 8. Wide space through which the hernia occurs.

Operative Procedure

This principle of irritation, which I presented before the Surgical Section of the Medical Society of the State of North Carolina in 1926, is combined with an additional new technique in the operative procedure which I shall describe. This new technique is based on a very old surgical principle—namely, relaxation of tissues to take tension off of suture lines. I have been employing the following operative procedure for the repair of hernia since 1927:

The usual oblique incision, parallel with Poupart's ligament, is made. The fascia of the external oblique muscle is exposed above the canal, and is stripped free of fat and areolar tissue from above the canal down to the level of Poupart's ligament. Stripping is not done medially, as it is not desired that the blood supply in this area be disturbed. The inguinal canal is then opened along its upper border, so as to give a wide external flap, by incising the fascia of the external oblique muscle in the direction of its fibers, well above the internal ring. This gives a rather wide flap of muscle down to Poupart's ligament. This flap is retracted, Poupart's ligament is identified, and the flap and the ligament are traumatized with dry gauze after all fat and connective tissue have been freed. The lateral border of the internal oblique and transversalis muscles and their conjoined tendon are traumatized in a similar way. This traumatization is thoroughly done, and in the case of a large hernia, direct hernia and recurrent hernia these two structures are traumatized (fig. 1) with a curette. The gauze is usually sufficient in the ordinary case. The medial flap of external oblique muscle is then retracted far toward the midline, exposing completely the anterior sheath (fig. 1) covering the rectus abdominis muscle. This fascia is nicked (fig. 2) with the scalpel, beginning just

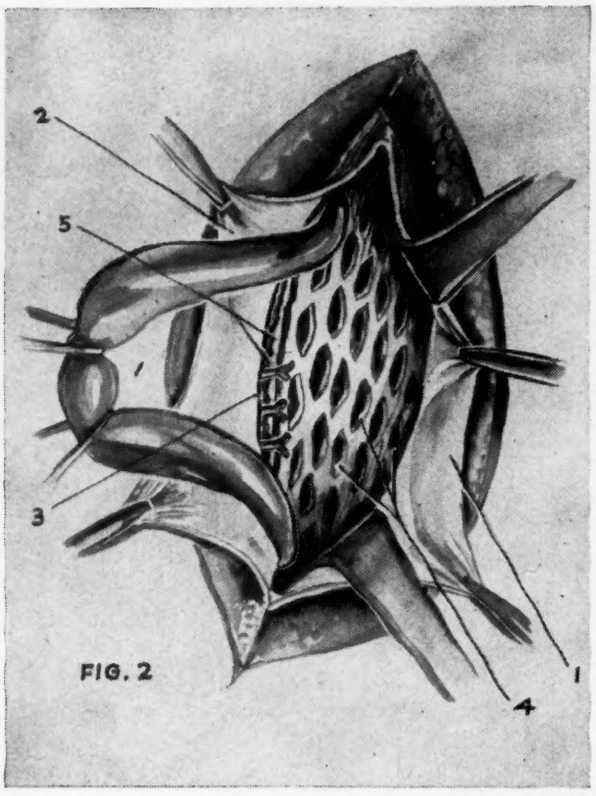

Fig. 2. 1. Inner leaf of the external oblique muscle. 2. Outer leaf of the external oblique muscle. 3. Poupart's ligament. 4. Multiple nicks of the anterior rectus sheath which have flared open, resulting in relaxation of the internal oblique and transversalis muscles with their conjoined tendon so that these structures fall against Poupart's ligament without tension. 5. The internal oblique and transversalis muscles, their conjoined tendon having been relaxed and traumatized, are now being sutured to Poupart's ligament, which has also been traumatized.

above the level of the internal ring and extending well down to the pubis, with thirty to forty nicks placed close together. These nicks are made longitudinally to the rectus muscle, and are about one-third to one-half inch in length. This procedure will relax the tissue and allow the internal oblique and transversalis muscles and their conjoined tendon to fall against Poupart's ligament without any tension (fig. 2).

The sac is then isolated, opened, emptied, ligated and transfixed high above the internal ring beneath the arching fibers of the internal oblique and transversalis muscles.

The internal oblique and transversalis muscles and their conjoined tendon are then sutured to Poupart's ligament, the fibers of the ligament being caught at different levels so as to make a wide attachment. This can easily be done by six to eight sutures and without the least bit of tension. The cord is usually transplanted, except in children. Extra-aponeurotic transplantation of the cord is done in direct hernias and in large oblique and recurrent hernias. This transplantation is especially indicated in direct hernias and recurrent hernias to fortify Hesselbach's triangle.

In any event the external oblique muscle is widely overlapped, not only for its additional support but to further relieve tension of the deep suture line (conjoined tendon and Poupart's ligament).

Chromic catgut was used in this series. Cotton sutures are now being used, with much less drainage.

Report of Cases

A consecutive series of 576 inguinal hernia operations were done in Charlotte hospitals and in the Reeves Hospital at Lincolnton in the period from January 1, 1927, to July 1, 1939. The youngest patient was a premature baby three weeks old, with a strangulated hernia. The oldest was a man of 87 with a double hernia. Of the 576 cases, 450 hernias were indirect and 126 direct; 112 were bilateral; 42 were recurrent, and 9 of these were bilateral. These recurrent cases had been operated on from one to four times. Thirty-eight were strangulated.

About 68 per cent of the cases (381) were followed for a year or more, and in this group there were 4 recurrences—a fraction over 1 per cent. One patient had recurrence three months after operation following an accident. It has since been repaired and he now has a good result. The second case had been operated on elsewhere and had had a recurrence. Following my operation he had an infection and a recurrence in a few months. The other two cases were strangulated direct hernias in obese men with pendulous abdomens.

With the application of this technique which I have discussed, I am about ready to agree with Turner[12] that there is virtually no hernia that cannot be cured by surgical operation. I would go a step further and say (not in a boasting way) that I have yet to find the inguinal hernia that cannot be cured by operation.

Conclusions

1. Muscle and fascia, when freed from

12. Turner: Proceeds Royal Society of Medicine, Vol. 30: 535, 1937.

areolar tissue and brought into direct contact and sutured, unite.

2. Much denser union takes place between muscle and fascia when the parts are traumatized, with the use of a curette or by snipping away bits of muscle tissue.

3. Multiple nicks of the rectus sheath give sufficient relaxation to permit suture of the conjoined tendon to Poupart's ligament without tension.

4. Wide overlapping of the external oblique muscle results in additional relaxation of the deep tissues and their suture lines.

5. If these principles of irritation and relaxation are applied in operating for hernia, denser and firmer union results, thereby offering a greater barrier to recurrence and lowering the percentage of failures.

Abstract of Discussion

Dr. John Kennedy (Charlotte): I had the pleasure of seeing some of Dr. Bost's experiments, in which he demonstrated that fascia and muscle will unite: first, if there is no interlying fatty tissue, and second if the tissues are traumatized. Those experiments were of distinct help to me in getting union in cases of hernia.

Dr. Bost made an even better contribution to the cure of hernia when he began the use of the procedure that he described last, in which he makes multiple punctures of the fascia overlying the lower rectus muscle in order to get relaxation of the conjoint tendon and the lower oblique muscle. With this procedure one is able to suture these structures well down to Poupart's ligament without appreciable tension. The structures practically fall together, and do not have to be pulled together by sutures.

This method is particularly applicable to direct hernias, in which there is the largest separation of these structures and in which recurrence is more likely. If the patient vomits or hiccoughs or inadvertently gets out of bed there is very little tension put on the sutures. Even if some infection develops there is usually a good union, if the sutures are put in in this way.

I think Dr. Bost has given us two distinct improvements in the operation for hernia, and since watching his work and adopting his technique I undertake operations for hernia with much less misgiving than before.

Dr. Donnell B. Cobb (Goldsboro): I should like to ask Dr. Bost a question. I notice that in doing this experimental work some years ago he used silk and catgut. I should like to know more about his experience with the use of cotton.

Dr. C. V. Tyner (Leaksville): The principle of relaxation of structures by multiple punctures is applicable not only in operations for inguinal hernias, but in other procedures as well. I recently operated on a patient who was in poor general condition, and utilized this principle in bringing the abdominal wall together. The patient had pneumonia following the operation, and a rather stormy convalescence, with coughing and straining. In spite of this he had a good result.

It has also been our experience that traumatizing the tissues increases the firmness of the wound.

Dr. Bost: I shall be glad to confess where I got the idea of traumatizing the tissues. Soon after I came to Charlotte an old man with a very large hernia came to my office and asked me if I could fix it. I told him that I was in that business. He said, "How are you going to fix it?" I told him that I would cut down and dissect the parts and sew it together. He replied, "That will not do it." When I asked him why it would not, he said, "Isn't it something like a puncture in an automobile tire? If I have a puncture in a old tire and put a patch on there it will not stick unless I roughen it up. Isn't this about the same way?" That is an example of getting ideas from a field outside of medicine, as we often do.

As to the use of sutures, in the experimental work I used both catgut and silk, and I can not say that I saw any difference afterward so far as the sutures are concerned. In all this series of operations, from 1927 to 1939, I used catgut; but I am now using cotton altogether, not only in hernias, but in all clean surgical cases. I am certainly pleased with the results. I find that there is much less drainage with the use of cotton sutures.

THE MANAGEMENT OF SOME OF THE PROBLEMS OF LATER LIFE

ROSCOE D. McMILLAN, M. D.

RED SPRINGS

Within the past century the advance of medical science has practically changed "the survival of the fittest" to the survival of everybody, fit or not. However, it is not mere increase of years that should be sought, but health in old age. Most of those who dread old age are thinking of the decrepitude which so often accompanies it—failing senses, feebleness, stiffness of the joints, arteriosclerosis, and heart ailments. Are these infirmities necessary?

This question must be seriously considered when we read a report of the committee on population problems of the National Resources Commission, made in 1938, which pointed out that by 1980—if present population trends in the United States continue—there will be only 6,500,000 children under 5 years of age, and 22,000,000 people over 65 years of age. As someone aptly stated, "We are becoming a nation of elders."

The answers to these problems of old age, however, are far from clear. It is with these problems that everyone must concern himself, for logic inexorably leads to the conclusion that either these increasing millions

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of elderly persons must have the opportunity to work and support themselves or the proportionately smaller group of younger persons will have to support them in one way or another.

The practice of medicine is changing. As acute infectious diseases yield more and more to preventive measures, the chronic and progressive disorders of middle and later life take increasingly important places, and medical men are now beginning to specialize in geriatrics. Aside from picking one's ancestors, the only preventive measures known to be at all effective for the chronic degenerative diseases of later life are the establishment of proper habits in early life, the avoidance of excesses, and the prompt removal of infectious foci detected by periodic health examinations. Biochemical experimentation has put the study of nutrition on a firm scientific basis and has led to the isolation of many vitamins and the determination of their functions. While the full influence of improved nutrition resulting from this work has not manifested itself, undoubtedly lower morbidity and mortality rates in a number of diseases will eventually follow.

Before discussing some of the special considerations in caring for senile patients, I should like to mention some of the general characteristics of these patients. Having survived a life time of conflict with microbes, poisons, starvation and strain, old people may have more confidence in their own remedies than in those of the physician.

It is a little difficult to know when senility begins. The medical man realizes that its onset is not marked solely by the flight of time. Physiologically it appears when degenerative changes have limited the individual's activities and lessened or abolished his sex life. Pathologically its onset is visualized in extensive arteriosclerotic changes which make impossible an adequate distribution of blood and oxygen to the tissues.

Healthy, normal old age with equal wearing out of the parts is extremely rare. Pathologic or abnormal old age is burdensomely common. In a study of 300 patients 60 or more years of age Barker determined that the circulatory apparatus was most commonly affected, with the nervous system, the locomotive apparatus, and the digestive system, in the order named, being runners-up.

Cardiovascular Disorders

As time allows me to discuss but few of the problems of old age, my first consideration is the cardiovascular system. In elderly people the heart presents many clinical pictures. Coronary arterial disease is the chief feature. There are instances of long-standing rheumatic diseases of the aortic and mitral valves. There are long surviving or late developing cases of syphilitic aortitis. But the degenerative lesions dominate in the cardiac disease of old age and produce the phenomenon of coronary thrombosis or spasmodic angina. Failure with congestion often supervenes upon one or the other of these, or occurs without these preliminaries, as the amount of sound muscle in the heart dwindles. These conditions, of course, are hastened by the increased arterial pressure which is so frequent with advancing years.

For the prevention of anginal pain the type of exertion that produces the pain must be studied. Pain may be caused by types of exertion that require much less effort than other types which produce no pain at all. Generally speaking it is better to have the patient engage in some sort of occupation. Absolute rest after meals is highly important, and careful attention should be given to the bowels (straining at stool often precipitates an attack), and to the avoidance of emotional stress of a business, political, or domestic nature. Medication should be directed toward increasing the coronary blood flow. For immediate relief of pain nitroglycerine under the tongue has no equal. As permanent coronary dilators aminophylline and theobromine have proven very satisfactory. Phenobarbital to relieve emotional tension is valuable.

The major cardiac emergency in the aged is acute coronary occlusion. The old axiom, "The aged should be kept out of a morbid sick bed," has no place here. Rest, oxygen, morphine, atropine, and sometimes aminophylline constitute the emergency treatment. Recently, papaverine has been used in these cases, as it does not augment vagus activity and there is some experimental evidence to indicate that it increases the coronary flow. In cases where papaverine will not control the pain, its use will permit a reduction in the amount of morphine.

In some instances the occurrence of fibrillation is an indication for the administration of digitalis, but in many of these elderly

patients there is a digitalis-like effect without the use of the drug. With a fairly good myocardium quinidine, of course, is the drug of choice. However, quinidine is a cardiac depressant and most aged patients have a poor or failing myocardium. When heart failure complicates the picture, the treatment is the same as that for heart failure in any other patient, which is so well known that I need not go into it here.

Mental Symptoms

The most distressing developments of old age are the mental symptoms. In the past this branch of medicine has been very much neglected because of the belief that arteriosclerosis or senile atrophy was the sole and only cause of these symptoms. In recent years study and observation have shown that we must take into consideration other possible factors, such as toxic conditions due to an excessive use of sedative medication, operations, trauma, infections, emotional disturbances, etc.

Clow analyzed 100 cases of psychosis accompanying cerebral arteriosclerosis in persons over 60 years of age. It was pointed out that the past history seemed to be important in that 61 of the patients were, in adult years, more than ordinarily tense. Fifty of them were described as having an unusually narrow range of interest. A large proportion of them made notably poor sexual adjustments; 33 showed maladjustments ranging from frigidity to promiscuity and psychopathic behavior. Emotional disturbances were frequently a factor in upsetting the limited adjustment of the person with cerebral arteriosclerosis and precipitating a psychosis. A diagnostic breakdown showed that 34 patients had delirium as the presenting clinical picture, 19 agitated depression, 18 mental confusion, 4 depression, 5 manic-like states, and 4 paranoid states. Only 14 patients presented deterioration as the most prominent feature.

Of these 100 patients 11 recovered, 12 were much improved, 31 improved, 30 did not improve, and 16 died. Forty-nine patients were able to return home. Treatment consisted of psychotherapy and general medical treatment. None of the patients were treated with any of the more drastic modern procedures.

The physician who studies these cases with an open mind cannot help but conclude that pathologic conditions such as senile dementia and arteriosclerotic psychosis are not the sole causes for mental disorders of older people, but are factors in the total etiology in that they lower the adjustability of the whole organism and its physiologic processes, thereby making it easier for the various types of psychosis to develop.

Certain measures are necessary in the management of these patients, irrespective of the cause of the mental disorder. In the early stages of the psychoses of old age the patient may commit serious errors of judgment before his irresponsibility has been recognized. He may make unjust alteration of a will or poor financial investments. Early diagnosis is important for the protection of both the patient and his relatives. From a psychiatric standpoint, the treatment of aged individuals revolves about Bleular's interesting observation: "Senility often becomes a disease only as the result of the sudden cessation of ordinary attractions of life." Towards the senile person the physician's principal responsibilities are those of (1) cheerful encouragement and (2) regulation of habits and diet. The diet should be well balanced, and adequate amounts of vitamin B should be supplied. In arteriosclerotic conditions, reduction of salt intake should be encouraged. Alcohol is especially contraindicated. Sedation is a problem. Warm baths and warm drinks at bedtime are preferred to drugs. If sedatives are imperative the rapidly acting barbiturates are the drugs of choice, since they are quickly eliminated. Dilaudid in small doses has served me well in these cases.

Diabetes

Great interest is attached to the trend of mortality from diabetes because it is the one disease of the middle aged and elderly for which an effective means of treatment has been discovered. Yet the mortality rate from this disease is not declining. The rate in 1900 was 9.7 per 100,000 estimated population; in 1919 the rate was 14.9; in 1938 it was 23.8. The increase in the mortality from diabetes has taken place in spite of two important advances in the treatment of the disease—proper management of the diet and the use of insulin. This increase is based probably on better diagnosis as well as on an actual increase in the number of persons who have developed the disorder. Population

age shifts have also played a part. An increase in certain foreign race stocks particularly susceptible to the disease, especially Hebrews, is another factor contributing to the increased mortality. Scientific investigation on the etiology of the disease has indicated that there are two factors of importance—heredity and obesity. The gradual increase in the number of persons who can command luxuries in food and drink has led to a greater number of overweight persons in the population.

The prevention of diabetes hinges primarily on education. Since the obese persons is the most likely candidate for the disease, the maintenance of proper weight must be stressed. Those with a diabetic family tendency particularly should be taught to avoid habits conducive to the development of the disease. Such persons should be warned against permitting the marriage of their offspring into families with the same predisposition.

The diabetic himself must be taught to guard against the development of acidotic coma and infections of the feet, hands, and other parts of the body. The arterial changes in the elderly diabetic which interfere with normal circulation contribute to the development of gangrene, which is an ever present threat to the senile diabetic. The type which seems most hopeless is that in which there is pain, with no history of injury or accident to the foot. The pain arises from the tissue ischemia and its severity becomes a measure of the ischemia. In these cases early amputation is advisable. There are other types of gangrene which present a more hopeful picture. In these cases the lesion follows an accident. There may be no pain but some swelling. The patient is surprised sometimes to find the toe discolored. The pathology in these cases is different and conservative treatment often brings about a happy result.

Digestive Disturbances

Digestive disturbances are common in the aged. Many of these disturbances are due to diseases outside of the alimentary tract—as, for example, cardiac and renal diseases, and arthritis. These conditions occur frequently in old age, and may be the cause of many symptoms referable to the gastro-intestinal tract.

The physiologic changes in the gastro-intestinal tract resulting from the aging process are not very well understood and the disturbances are so diverse that only certain general conditions can be taken up here.

The problem of mastication in the aged often brings about a radical change in the diet, making it high in carbohydrates and low in protein. While drastic dental surgery is to be avoided as much as possible, I am advocating properly fitted dental plates so that these individuals may eat vegetables in sufficient quantities. This, with the aid of mineral oils and enemas, will eliminate catharsis for the fecal impaction and constipation so common to senility.

The burning, dry, glazed red tongue so often encountered in the aged may be due to lack of fluids, diminished salivary secretions, achlorhydria, pernicious anemia, or vitamin deficiency, and much consideration is needed for proper selection of therapy.

Pneumonia

All of us are acquainted with the oft-quoted dictum of Osler, "Pneumonia may well be called the friend of the aged." Taken off by pneumonia in an acute, short, and relatively painless illness, the old escape those "cold gradations of decay" that so often make the last days of life a burden. Though modern methods of treatment have achieved a remarkable decrease in the mortality of pneumonia, the "pneumonia of the aged" continues to show a death rate much out of proportion to the reduction in mortality in the whole group of pneumonias.

In brief the following measures should be employed:

1. The use of the sulfonamide group of drugs, with due regard to their toxicity.
2. Serum treatment early, if typing of the sputum reveals a type amenable to specific treatment.
3. Oxygen.
4. Digitalis, especially in the presence of congestive failure, as pneumonia is often the result of this condition.
5. Measures to control cough and pain and secure adequate sleep.
6. Rectal tube enemas, and possibly mild catharsis, to relieve the abdominal distention.
7. Adequate food and fluid, along with such drugs as caffein, strychnine and coramine, for supportive treatment.

Surgery

Old age is not a contraindication to

surgery. With proper preoperative preparation, proper selection of anesthetic and anesthetist, good surgical judgment, gentleness in handling tissues, and with such measures as oxygen therapy, insulin and glucose, and blood transfusions at our command, surgery in the aged patient involves no great risk. The many improved diagnostic aids at our disposal enable us to decide much more accurately the optimum time for surgery. Still we must exclude two classes from the benefit of elective surgery: the patient with congestive failure, and the patient with a recent myocardial infarction. Except in these two classes surgery in the aged has produced better than expected results and has saved many an individual from years of suffering and invalidism.

Conclusion

In these individuals who have passed beyond the sixth or seventh decade of life drastic measures of all kinds are to be avoided. Today we are more Wassermann conscious than ever before. If the senile patient has stood positive serology over these many years, be cautious. Syphilitic tissue is better than no tissue at all.

Remember that the ordinary symptoms of disease are often vague, indefinite or absent in the aged. Pain is often negligible. Temperature rises to lower levels and vomiting occurs infrequently.

Above all else the physician must have an understanding sympathy, patience, tact and respect for these old individuals.

Abstract of Discussion

Dr. J. M. Northington (Charlotte): I would like for all doctors to look upon all old persons as their parents or at least their foster parents. Undoubtedly it is largely through our efforts that the average span of human existence has grown longer and longer and largely through our efforts that we will have a larger and larger percentage of our total population among those that we call aged.

I dare say that after a while the level at which we begin to call people aged will be advanced, because this is a relative thing. It was generally accepted thirty or forty years ago that a man past 50 or 60 with hernia, single or double, was going to die soon anyhow, and that it would be subjecting him to unreasonable risk to operate. Early in my medical experience, I saw a very sensible man past 70 who had been carrying a hernia for twenty years, on the advice of his physician, decide that he wasn't going to carry it any longer. He had this repair made, returned his intestine to his abdominal cavity where it belonged, and got along happily for another ten years. He said his only regret was that he hadn't done it before in spite of the advice of his family physician.

Hemorrhoids, real and alleged, are another condition which afflicts a great number of old persons. Of course, the first thing to do is to determine whether this condition is malignant, but even if it is not malignant, in the vast majority of instances it should be corrected, and can be corrected with almost mathematical accuracy. It will not jeopardize life, and it will add to the joy of living.

Certainly the important thing is not how many days we live, but how much we live. I will conclude by making a reference to my own father. My father lived to be 78 years old, the oldest Northington I have ever heard of. He died on Sunday morning. On the previous Tuesday morning, he went on a forty-mile fishing trip against the advice of one of those people who think the important thing is to live always, and that all those things you enjoy will certainly shorten your existence. He remarked to this person, "So far as I know, it is just as straight a road from Slade's pond to Heaven as it is from my house or any church or hospital." I would like to leave that idea with you for the minds of your patients. What reason is there for prolonging an existence if you give up everything you love to do so?

I appreciate the invitation to speak, and I trust that every member of this section will take to heart what Dr. McMillan has so well said.

Dr. W. T. Rainey (Fayetteville): I want to thank Dr. McMillan for bringing this subject to our attention. I think that most of us rather neglect the care of the aged, and if the predictions of statisticians are true, the next generation will have quite a few of them to handle. It is very timely to bring this subject to our attention.

SOME OF THE PROBLEMS OF ANTENATAL CARE IN NORTH CAROLINA

A. W. MAKEPEACE, M. D.

CHAPEL HILL

North Carolina has had for years a statewide program, the purpose of which is to offer many of the women in the state advice and assistance during pregnancy. The people of the state may be justly proud of the progress made by their State and County Boards in the field of maternal care. Let us, however, dwell for a moment not upon past achievements, but upon some of the needs of the future. Are these maternal programs and clinics accomplishing their purpose or do further advances need to be made?

From the educational viewpoint there is still much to be accomplished. The need is twofold; for not only does the public need to be made aware of the existence and value of antenatal clinics, but unfortunately the physician frequently must be convinced that competent care is not a pure waste of time. A respectable maternal mortality figure cannot be achieved until both the patient and

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the physician realize the importance of antenatal care throughout pregnancy. The patient must be taught to report to her physician before the end of the first trimester, and preferably as soon as she realizes that she is pregnant. The physician must be willing to give this patient adequate care when she comes to his office and to remonstrate with those who report late in their pregnancy. By this means he can accomplish much toward having the women in the community ask for antenatal care early in their pregnancy.

Throughout the state there exists a serious problem in the matter of getting the clinic's services to the indigent patient. It is somewhat futile to teach the patient to value antenatal care if she is unable to attend the clinics. Before one can say that adequate service is offered, the problem of transportation must be solved. In some way the patient must be brought to the clinic or the clinic brought to the patient. Undoubtedly in certain regions a mobile unit could be utilized to great advantage. Elsewhere the terrain would perhaps make such a plan impracticable, and the patient would have to be brought to the clinic. There might be myriads of difficulties to overcome before such a program could be put into action, but there exists in North Carolina today a splendid school transportation system. These buses stand unused from 8:30 a.m. to 3:00 p.m. Possibly they could be utilized to bring to the clinic the patient who otherwise could not get there. If it is important to get the child to school, it is just as important to ensure a healthy child who will be able later to go to school. This suggestion may be impossible, impracticable and valueless, but if so, some other must be made and put into use.

The personnel in many of these prenatal clinics is far from adequate. It is obvious to all that one physician alone cannot handle 40, 50, or at times, I have been told, even 60 cases in an afternoon. In some counties this problem could be solved by obtaining the assistance of more of the physicians in the community. In communities where there are physicians available and needed, and yet not helping, it would seem that the problem has not been properly presented. However, in communities in which each physician is giving from two to four afternoons a month to public health clinics some other method of staffing clinics must be considered and worked out. It seems to me that a determined effort should be made to interest and get into the clinics the specially trained men of the medical community. Their knowledge and methods would be of great help to the man doing general work, and they would also be available as consultants. Both men, the specialist and the general practitioner, however, should cooperate in running the clinic in order that the burden would not be too great upon either, and also that each may see and learn of the other's problems and observe how they may best be solved.

The question of the routine to be followed in the antenatal clinics is a rather difficult one. I believe that there should be a minimal routine which should be followed in every case. It is recognized and accepted by obstetricians throughout the country that certain procedures should be carried out in the examination of every pregnant woman in order to protect her from possible catastrophe during her prenatal course or at delivery. We will not go into the details of these procedures at this time, but I believe that the basic principles should be considered, accepted and put into force. Naturally, any expansion of the basic routine would always be permitted.

Let me say a few words now about the general attitude towards antenatal clinics as I have observed it. The monthly antenatal clinic is such a great advance over no care at all that this achievement seems to act as a definite brake upon the speed of further progress. Certainly from all sides one gets the impression that commendable work has been done (which of course is absolutely true) and therefore enough has been accomplished for the time being. In certain places it is the general belief that a visit once a month is all the load that can be carried, and that it will be impossible to get either the physician or the patient to accept more frequent visits. This is represented to be all the more true since until just lately no care at all seemed quite adequate.

Virginia thought five years ago that public health antenatal clinics were impossible. They are now spread throughout the state. North Carolina now thinks antenatal care for the indigent, on a par with that available to the private patient, is also impossible. It is and it will be so until the value of preventive medicine in obstetrics is accepted. Antenatal care is almost wholly preventive

medicine. The great majority of women come to the physician well and it is primarily his duty to keep them so. Too often because there is little to cure, there is little interest shown. The principal pitfalls of pregnancy—toxemia, infection and hemorrhage—can be avoided by preventive methods. And yet it is these three factors that are killing our women. Antenatal care should also include proper attention to existing disease or abnormality — tuberculosis, diabetes, syphilis, heart disease, and the abnormal or small bony pelvis which may cause disproportion at term. Such abnormalities may and often do require some modification of the usual conduct of the antenatal period, but when they are properly handled pregnancy may still terminate successfully, a well mother and a healthy baby being the outcome. That such an outcome is the natural result of careful supervision during the antenatal period must be driven into the minds of everyone—the patient, the public health service, and the individual physician. The following table shows the maternal mortality for the United States registration area at large and for North Carolina:

Maternal Deaths per 10,000 Live Births

Year	*U. S. A.*	*N. C.*
1930	67	84
1935	58	70
1938	44	56
1939	40	50

Idaho had the best maternal mortality figure for the country in 1939, with 22 deaths per 10,000 live births.

The figures of the Bureau of Vital Statistics of North Carolina for 1939 show the following chief causes of maternal deaths:

Cause	*Percent. of Total Deaths*
Toxemia	29
Infection	19
Abortion	6.6
28 weeks or more	12.4
Hemorrhage	12
Total	60

Almost every one of these deaths is needless. At least 60 per cent of the deaths during pregnancy therefore can and should be avoided. It would seem that we still have to learn a part of our lesson here in this state.

The job is only partly done when a patient is carried successfully to the end of her antenatal period. Unless she receives equally good care during delivery and in the postpartum period all the value of the previous nine months of care may be undone in a few hours' time. At present and for some time in the future it will be impossible to supply hospital beds for all pregnant patients. The financial problem of building and maintaining adequate facilities is too much to consider now, and will be, perhaps, for a generation. Some time in the future small hospitals must be placed in strategic spots throughout the state to serve communities at present without such facilities.

While we are waiting for such a happy state of affairs, however, a definite plan should be evolved for more effective use of the hospital space now available. Large home delivery services are conducted by many of our medical schools. The women are delivered in the home by a relatively untrained individual, a third or fourth year medical student. In spite of home delivery, and the deficiencies of the accoucheur, the records of such services are excellent. Morbidity is low and mortality practically non-existent. This excellent record is made possible by means of a very careful sifting of patients in the antenatal clinic. Only normal cases are left for delivery in the home. All other cases are referred for delivery in the hospital. Such a plan functions well because, first of all, abnormalities are not handled in the home; and second, adequate consultation is available in cases in which the decision is not at once clear. Such a plan might be applied in the State maternal clinics. A plan for rendering the consultative service would have to be worked out. Perhaps it could best be handled by referring the patient to the hospital for one antenatal visit. At this visit the obstetrician would see the case, decide whether the opinion of the general practitioner in the clinic was correct, and determine whether the patient should have a hospital delivery. Should such a consultative service and hospital delivery be available *particularly* for the woman with toxemia, a small pelvis, bleeding, or the record of a previous stillbirth or baby injured at birth, the maternal and fetal mortality rates would immediately show great improvement.

A plan similar to the one outlined above would require close cooperation between welfare agencies, county commissioners, hospitals, obstetricians, local health officers, and general practitioners. At first there might be difficulties, friction, misunderstandings. However, I believe that such a plan would in the long run tremendously benefit a community, and would make all efforts to get it into action well worth while.

Abstract of Discussion

Dr. G. M. Cooper, Assistant State Health Officer (Raleigh): Dr. Makepeace's paper is full of suggestions which are pertinent to the problem of maternal and child health work. Dr. Makepeace suggested the use of school buses for transportation. We tried for several years to get the school authorities to let us use the school buses for the transportation of children to preschool clinics. There has been a legal obstacle to that, and we have not been able to do it. As Dr. Makepeace says, however, that might be worked out in time.

In my judgment the most feasible plan is the one we are now following: to marshal all the forces we can and try to get these women to the clinic as early in their pregnancy as possible. I think the county health officers and nurses in the state have done a wonderful job. In the past year (1940) 15,293 women came for medical examination for the first time. Compared with about 10,000 the previous year, that is an increase of 50 per cent in the number of women examined. If we get more extensive help from a larger group of physicians (although more than two hundred of them are helping us throughout the state), with the help that Duke is giving us now, we can distribute the load so that one doctor will not have too many patients to attend to at one time.

Miss Dalton (Winston-Salem): I should like to tell you about our plan in Forsyth County for this work. In the last three years we have had an average in the community hospital of around 300 indigent mothers each year, with only one maternal death. If these mothers do not come to our clinics they have to pay $15 for the delivery. So our county nurses get all these cases into our clinics, and they are delivered in the hospital. We also have the aid of the Jewish Women's Council, which gives our layettes. The Presbyterian Women's Circles also make layettes. We are trying to make all mothers realize that layettes are necessary.

Dr. J. R. Hege (Winston-Salem): Before the State took over the school buses in North Carolina we had an arrangement worked out with the local board of education to bring the prenatal cases in to the clinic, which we held at that time somewhere near the school buildings. It was not necessary to have the buses make two trips, to get the mothers in and back. With a 2 o'clock clinic the buses would go out about 1 o'clock to collect the mothers and bring them in. They would go home on the same buses with the children. It was a very practical plan.

At the present time our preschool children are coming with their brothers and sisters on the school buses. There is no extra driving done. The teacher of the first grade gives a party on the registration day, and they come to register and have their preschool examination. I hope the school officials will not consider that a violation of the law, because we do not want that practice stopped.

Adequate prenatal service is not always available through the family physician. I think Dr. Cooper has done a great deal of good in supplementing our budgets to aid the local physicians in holding these clinics. The value of the work lies not solely in what the physician does in that prenatal clinic, but also in the fact that he himself gets a little education. He starts off poorly, and in a few months he is giving the clinic good prenatal service and also is giving his private patients better prenatal service.

Dr. A. D. Gregg (Henderson): It is necessary to educate our midwives and nurses to get these prenatal cases to the clinics or to the doctor in time. In my county the patients are sent to my office for a blood test by the midwives. Very few come before the sixth or seventh month. We must educate the midwives to look up their prospective patients and get them to the doctor in time to do some good.

I might say that in our county, also, the school buses bring the children to the preschool clinic.

ACUTE PERFORATION OF PEPTIC ULCER: A STUDY OF THIRTY-NINE CONSECUTIVE CASES*

N. P. BATTLE, M. D., F. A. C. S.

ROCKY MOUNT

During the ten year period from 1931 to 1941 there were 23,410 admissions to the Park View Hospital. Of this number, 120 patients, or 0.5 per cent, were diagnosed as having peptic ulcer. A comparison of this figure with the incidence of 0.85 per cent reported by Thompson[1a] for the Philadelphia General Hospital indicates that the great majority of the peptic ulcer patients in this community not requiring surgery are treated at home by their family physicians. Cases of perforated ulcers made up 0.16 per cent of the total admissions, however, in both series.

While 20.8 per cent of our 120 peptic ulcer cases were in females, there were no acute perforations among these. The American statistics reviewed[1] indicate that approximately 96.2 per cent of perforated peptic ulcers occur in males.

Twenty-six, or 66.7 per cent of the acute perforations occurred among the white patients, and 13 or 33.3 per cent among the Negroes. Of the total colored admissions, 0.72 per cent were for peptic ulcer. Perforation occurred in 39.4 per cent of these cases. Of the total white admissions 0.45 per cent were for peptic ulcer. The incidence of perforation in the white patients was 29.8 per cent.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

* The patients in this series were operated upon by Drs. E. S. Boice, B. C. Willis and N. P. Battle, the surgical staff of the Boice-Willis Clinic, Park View Hospital.

1. (a) Thompson, H. L.: Acute Perforation of Peptic Ulcer, Surg., Gynec., and Obst. 64:863 (May) 1937.
(b) Fallis, L. S.: Perforated Peptic Ulcer; Analysis of 100 Cases, Am. J. Surg. 41:427 (September) 1938.
(c) Morrison, W. R.: 200 Acute Perforated Ulcers of the Stomach and Duodenum from the Boston City Hospital, New England J. Med. 213:447 (September 5) 1935.

From table 1 it will be seen that the greater number of perforations occur in patients below the age of 41.

TABLE 1

Age Incidence in 39 Cases of Perforated Peptic Ulcer

15-20 years	8	31 cases under 40 . . 79.5%
21-30 years	13	
31-40 years	10	
41-50 years	4	8 cases over 40 . . 20.5%
Over 50 years	4	

At the Philadelphia General Hospital[1a] 85 per cent of the perforations occurred between the ages of 30 and 60. The Boston City Hospital[1c] reported that there were more perforations between the ages of 35 and 45.

Of the 39 perforated ulcers in our series, 36 were duodenal and 3 pyloric. The 3 pyloric ulcers were so classified because deformity and induration made a more exact classification impossible. None of the ulcers were situated posteriorly.

Twenty-seven of the patients (71 per cent) were engaged in an occupation requiring active work. Eighteen of these were farmers. The seasonal incidence of perforation in our series is considered in figure 1.

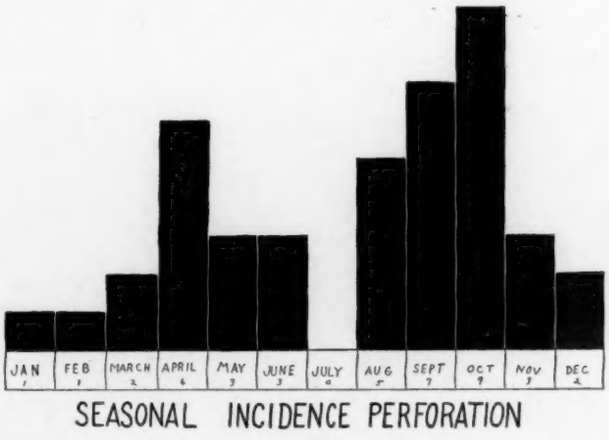

Fig. 1

Fallis[1b] at Henry Ford Hospital in Detroit found that 33 per cent of the perforations in his series occurred during the summer and that 15 per cent occurred in June.

A correct preoperative diagnosis was made in 81.5 per cent of the Boice-Willis Clinic series. This percentage is comparable to those reported by Fallis[1b] (88 per cent) and Morrison[1c] (77.5 per cent). In the cases diagnosed incorrectly, appendicitis was the most frequent diagnosis. A preoperative diagnosis of appendicitis was made in 5 cases. Perforated ulcer was confused with acute cholecystitis in two instances. A moribund case was diagnosed as acute pancreatitis. Only one error in diagnosis was made in cases seen during the first six hours after perforation, the others occurring in cases seen in the reaction period. A history of sudden, agonizing pain, with a previous history of indigestion, associated with generalized abdominal rigidity or upper abdominal rigidity and tenderness was considered sufficient justification for a preoperative diagnosis of acute perforation of peptic ulcer. Only 2 patients of this series, one of whom was moribund on admission, were seen in shock. It is probable that some of the patients had recovered from shock before admission to the hospital, as only 8 patients were seen during the first six hours. White and Patterson[2] are of the opinion that "the shock so often emphasized in the textbooks as one of the characteristic features in these cases is not a true surgical shock." Leukocytosis did not appear to be of diagnostic significance because of its variability. In the fatal cases the leukocyte count ranged from 3,600 to 27,200. The temperature and pulse rate were too variable to be of diagnostic aid. Of the 14 cases examined by fluoroscope, only 6 showed positive evidence of gas beneath the diaphragm. In this series the decision to operate was not influenced by negative fluoroscopic findings or by failure to demonstrate the "absence of liver dullness." Mooney[3] is of the opinion that the most typical symptoms of perforated peptic ulcer are "sudden onset of epigastric pain and bilateral tenderness on rectal examination."

In only one patient in this series did perforation occur without previous symptoms of ulcer. Eight more patients had symptoms of two weeks' duration or less. If all 9 cases are considered as having no appreciable previous ulcer symptoms, the incidence of 23 per cent is comparable to those reported by Morrison (25 per cent) and McCreery[4] (19.1 per cent). Fallis, however, reports an incidence of only 11 per cent of perforations occurring without previous symptoms.

Saline solution, with or without 5 per cent glucose, was used preoperatively and during the operation, when indicated. The duodenal

2. White, W. C., and Patterson, H. A.: Late Results of Simple Suture of Acute Perforated Duodenal Ulcer, Ann. Surg. 94:242 (August) 1931.
3. Mooney, J., Jr.: Atypical Signs and Symptoms in Perforated Peptic Ulcer, South. Surgeon, 9:179 (March) 1940.
4. McCreery, J. A.: Perforated Gastric and Duodenal Ulcer, Ann. Surg. 107:350 (March) 1938.

tube was inserted preoperatively in some of the cases. Either a right rectus or a right paramedian incision was used in this series. Wound disruption occurred in 2 cases in which a right rectus incision was used. Fallis[1b] advocates a midline incision on the grounds that the operating time is reduced and that there is less tissue loss in infection because the fascial spaces are not opened. Hartzell and Sorock[5] prefer a short transverse incision at a point about 5 cm. below the costal border, starting in the midline and extending to the right, and they present very convincing reasons for this preference. Leakage and free fluid were removed by suction and sponges.

The types of operations performed and the number of times that they were used are shown in table 2.

TABLE 2

Treatment

	Cases	*Deaths*
Simple closure	20	4
Excision	6	0
Excision and pyloroplasty	11	0
Not operated upon (moribund on admission)	1	1
Simple drainage (walled off abscess)	1	0

Where "simple closure" was used, the technique consisted of closing the perforation by one of several recognized procedures, and covering the site with omentum. In the perforations treated by simple excision, the ulcer, with a variable amount of indurated tissue, was excised in the longitudinal axis of the gut and closed in the transverse axis, with the use of three layers of intestinal catgut sutures when possible. Omental reinforcement was used in all of these cases. When pyloroplasty was used in addition to excision, the technique was the same as that described above except that the elliptical excision was carried through and beyond the pyloric sphincter for a short distance. It will be noted that no gastro-enterostomies were performed in this series. Most of the cases (table 2) were treated by simple closure. All of the poor risks were included in this group. Lahey[6], and others of wide experience, feel that the procedure of choice in the treatment of this condition is simple closure.

In the cases diagnosed as appendicitis the abdomen was opened first through a McBurney incision. When there was doubt as to the diagnosis, the abdomen was opened through a right rectus incision that was low enough to permit examination of the appendix. Appendectomy in addition to an operation for ulcer perforation was performed in 11 cases.

From table 3 it will be seen that in over half of the cases drainage was not employed.

TABLE 3

Drainage

	Cases	*Deaths*
Not drained	21	1
Drained	17	3
Perforated:		
1-6 hrs.	1	0
6-12 hrs.	3	0
12-24 hrs.	6	2
More than 24 hrs.	7	1

When used, the drains were brought out either suprapubicly or through a stab wound to the right of the incision, or in both places. It was felt that the question of drainage depended upon the time elapsing between perforation and operation, and, to some extent, on the appearance of the peritoneum.

During the more recent years intravenous saline solution with 5 per cent glucose and Wangensteen suction were used postoperatively when indicated. Earlier in the series subcutaneous fluids and gastric lavage were used.

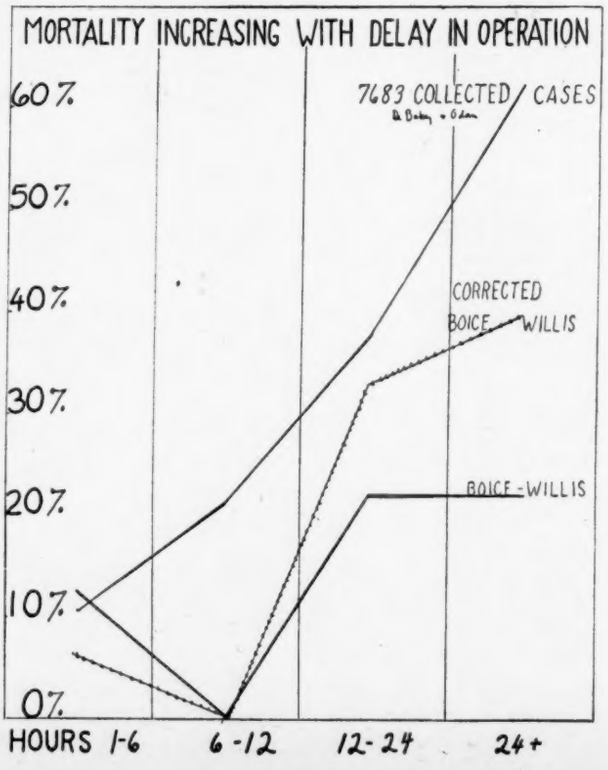

Fig. 2

5. Hartzell, J. B., and Sorock, M. L.: Acute Perforated Peptic Ulcer, Surg., Gynec., and Obst. 69:668 (November) 1939.

6. Lahey, F. H.: Peptic Ulcer, Pennsylvania M. J. 41:79 (November) 1937.

Early operation following perforation is the most important death-reducing factor in the treatment of this condition. In a series of 7,683 cases of perforated peptic ulcer collected from the literature by DeBakey and Odom[7], it was shown that the mortality increased in proportion to the period of delay (fig. 2). I am of the opinion that, while this observation is correct, the quantity and quality of the leakage and the age of the patient are important factors (tables 4 and 5, and fig. 3).

TABLE 4
Amount of Free Fluid

	Cases	*Deaths*	*Mortality*
None	5	0	0
Small amount	7	0	0
Moderate amount	8	0	0
Large amount	15	4	26.7%
Not stated	4	1	8.3%

TABLE 5
Character of Free Fluid

	Cases	*Deaths*	*Mortality*
Bile stained	7	0	0
Cloudy	12	1	8.3%
Flaky	7	2	28.5%
Purulent	4	3	75.0%
Not stated	8	0	0

In the Boice-Willis Clinic series the perforations were found to be sealed over in 8 cases at the time of operation. The time interval between perforation and operation varied from 2 hours to 5 days. None of these patients died. The mortality rate was corrected by placing those cases found with sealed perforations in the group operated upon within the first six hours (fig. 2). The low mortality rate in this series is probably due to the fact that 71 per cent of the perforations occurred in people under 40, and 51 per cent occurred in people under 30.

The mortality according to race is shown in table 6.

TABLE 6
Mortality According to Race

	Cases	*Deaths*	*Mortality*
White	26	1	3.8%
Colored	13	4	30.7%

Recurrence According to Race

	Cases followed	*Recurrences*
White	23	39.1%
Colored	7	42.8%

The death rate for white patients alone was only 3.8 per cent. Garver[8] in reporting a series of perforations in Negroes gave an uncorrected mortality of 20.9 per cent.

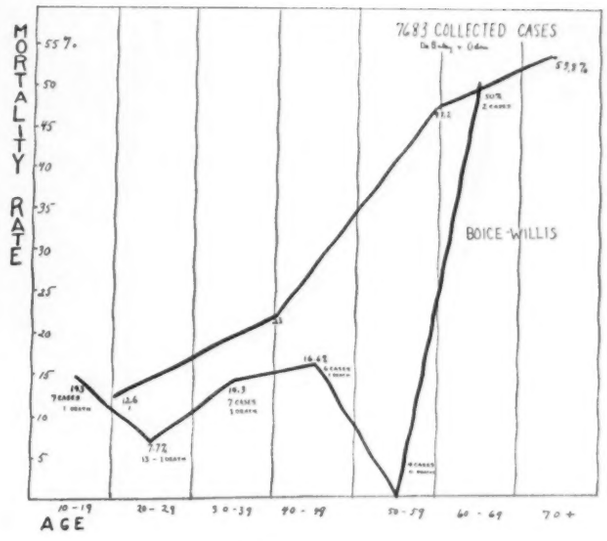

Fig. 3

The chief cause of death after perforation was peritonitis. Of the five deaths, four were in patients who were operated upon. In three of them purulent free fluid was found at the time of operation. Generalized peritonitis was demonstrated at autopsy in the case not operated upon, and in 2 cases after operation.

The postoperative complications are shown in table 7.

TABLE 7
Complications

	Cases	*Deaths*
Wound infection	8	0
*Wound disruption	2	1
Pneumonia	2	0
Atelectasis (after ether)	3	0
Subhepatic abscess	1	0
Subdiaphragmatic abscess (perforating into pleural cavity)	2	0
General peritonitis	5	5
*Intestinal obstruction	1	1
*Urea retention	2	1

* In addition to general peritonitis.

The statistics of the late results in this series (table 8) are based on replies to questionnaires, except for seven personal interviews. All of the cases with a complaint of digestive symptoms were classified as recurrences.

TABLE 8
Late Results in 30 Patients Followed Since Operation

	Cases	*Percent.*
Cured	14	46.7
Well 5 or more yrs.	2	6.7
Well 3-5 yrs.	1	3.3
Well 1-3 yrs.	4	13.3
Well 6-12 mos.	2	6.7
Well 1-6 mos.	1	3.3
Never relieved	6	20.0

7. DeBakey, M., and Odom, C. B.: Significant Factors in Prognosis and Mortality of Perforated Peptic Ulcer, South. Surgeon 9:425 (June) 1940.

8. Garver, C. C.: Forty-three Perforations in the Negro, 1939 Year Book Gen. Surg., p. 375; J. M. A. Georgia 27: 273 (July) 1938.

The percentage of recurrences is shown to be unusually high when compared with the results of the authors shown in table 9.

TABLE 9

Comparison of Late Results in Different Clinics

	Percent. of cases followed	*Percent. of recurrences*
Ford Hospital	69.0	36.3
Boice-Willis Clinic . .	88.2	53.3
Lewisohn		39.0
Bellevue	87.0	20.3

Table 10 shows the effect of the different types of operation on recurrences.

TABLE 10

Effect of Operation on Recurrence

	Cases followed	*Percent. of recurrences*
Simple closure	15	53.3
Excision of ulcer . . .	5	40.0
Pyloroplasty	9	66.7
Simple drainage	1	0

Abstract of Discussion

Dr. W. S. Hester (Reidsville): Dr. Battle has discussed the subject of perforated peptic ulcer thoroughly, and I only want to mention the method we employ. I have had 26 cases of ruptured ulcer in my experience, with three deaths. In practically every case where the condition of the patient was not too poor, we have done a posterior gastro-enterostomy, and have had very good success with it. Recurrences have not been quite so frequent as in Dr. Battle's series, so far as I have been able to keep up with them.

I notice Dr. Battle's mortality in colored people is high. Two of the deaths in my series were in Negroes. All my cases were men.

Dr. A. T. Patton (Siler City): I should like to emphasize the possibility of confusing rupture of a peptic ulcer with appendicitis. I was called to see a man about 33 years old, who was taken sick on a Friday night with "bellyache", he said. When I saw him on Sunday morning he had an acutely painful abdomen. There was no history suggestive of ulcer. Most of the tenderness was down in the appendix region, and, thinking he had appendicitis, I operated, using a McBurney incision. As I opened the abdominal wall some chocolate colored fluid came out. I found the appendix to be slightly inflamed, and I removed it and closed the incision. There was profuse drainage. I knew I had not gotten to the seat of the trouble. Two days after operation I gave him some methylene blue by mouth, and it came right out in the drainage. Two days later he died. His condition was too poor for a second operation. At autopsy I found a retroperitoneal ulcer. We seldom see a case like that except when there has been trauma.

Last summer I saw another case of perforated ulcer in a section where there had been a lot of spider bites. The doctors there held out for a diagnosis of black widow spider bite. I finally operated, after thirteen hours, and found a ruptured abdominal ulcer. This patient got well.

Dr. C. I. Allen (Wadesboro): I am especially interested in what Dr. Patton has just said, because in a period of twenty-five years I have had similar tragedies in cases of duodenal ulcer. When you see these cases ten or fifteen hours after rupture of the ulcer, as one often does in a small hospital, it is hard to make the diagnosis. If you operate, thinking it is appendicitis, you may find fibrin around the appendix and inflammation. In two cases of ruptured duodenal ulcer I have taken out the appendix, thinking it to be the cause of the trouble, because of the fluid there. The point I want to make is that if there is cause to suspect ruptured ulcer, even in the presence of fibrin and an inflamed appendix, it is well to look further.

Two or three doctors who have brought me patients with perforated ulcers have said that they could not realize that the patient had anything serious the matter with him, because there was no change in the pulse rate. One of the characteristics of perforated ulcer is that in the early stages the pulse remains slow. After peritonitis develops, there is, of course, a very rapid pulse rate.

Dr. Donnell B. Cobb (Goldsboro): I should like to say just one word about the incision used to expose these ulcers. The cases we surgeons see have hemorrhage, perforation, or obstruction. I was interested to note that one-third of Dr. Battle's cases were of the perforating variety. We have used in the last several years, with the few perforating ulcers we have had, the high transverse oblique incision. As you all know, it is at times impossible, with the right rectus incision, to expose the duodenum without much packing and retraction; and of course this injures the peritoneum and makes it susceptible to infection. If the operation can be done without much manipulation or handling of tissue the patient has a better chance of escaping without infection.

We make the incision from just below the rib margin. If the liver edge is projecting we retract it upward, exposing the anterior surface of the duodenum. The great majority of these perforating ulcers are on the anterior surface. I notice that in all of Dr. Battle's cases they were on the anterior surface. Fortunately, I have not seen a case of retroperitoneal perforation such as Dr. Patton described.

I think the general use of this simple incision and simple operation probably will be one of the death-reducing factors.

Dr. R. L. Pittman (Fayetteville): Since the building program at Fort Bragg began, there have been between 10,000 and 17,000 people there at all times, the average at present being about 12,000. We have had five ruptured duodenal ulcers since October in these workmen.

We had one case in which there was rupture of the second portion of the duodenum from a smoke-stack's falling on the man's back. Another man had a pole fall on him, which ruptured the second portion of his duodenum. The peculiar interest in these two patients was the indirect force producing rupture of the duodenum.

If a man is in good condition and will stand gastro-enterostomy we perform gastro-enterostomy rather than pyloroplasty. If the man is over 60 we do a pyloroplasty and close the ulcer as best we can.

I think there is some risk in closing the ulcer, because it is liable to leak in a few days and cause the death of the patient. If the patient's condition is good I see no reason for not doing a gastro-enterostomy or pyloroplasty.

LYMPHOCYTIC MENINGITIS

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CHARLOTTE

Lymphocytic meningitis probably occurs more often than is thought. It may be confused with other forms of meningitis, especially tuberculous or syphilitic meningitis, or with allied diseases of the central nervous system such as atypical encephalitis or poliomyelitis[1].

The case to be discussed presents the usual characteristics of lymphocytic meningitis (headache, stiff neck, nausea, vomiting, fever and a high lymphocyte count)[1], but it also has unusual features that appear to make it worthy of record. Outstanding is the fact that the patient had not one but two attacks, each attack having meningeal sequelae. In addition, the patient was found to exhibit signs of Marfan's syndrome (arachnodactyly), a familial disease.

It is probable that not all the cases referred to as lymphocytic meningitis, or benign lymphocytic meningitis, are caused by one etiologic agent[2]. Acute aseptic meningitis, or lymphocytic meningitis, was first recognized by Wallgren as a new clinical entity in 1925; and when Armstrong and Lillie in 1934 isolated a virus which produced the disease experimentally in mice and monkeys[3], and used the name "lymphocytic choriomeningitis", it was at first assumed that the etiology of all the cases grouped under Wallgren's definition was established.

Since then, however, cases have been reported[4] in which the virus or its antibody has not been found, so that it appears probable that the virus of Armstrong and Lillie may not account for all forms of lymphocytic meningitis. Perhaps it is best to group together all similar cases, variously described as acute lymphocytic meningitis, acute serous meningitis, benign idiopathic meningitis, lymphocytic choriomeningitis, and epidemic meningitis serosa, under the general heading of lymphocytic meningitis and differentiate them only as their etiology is established. It may yet be shown that other viruses or infections, or etiologic agents as yet unsuggested play a part in some cases. In the present case, owing to an unfortunate misunderstanding, no search was made for a virus, and this must of necessity take its place under the general classification until there is prooof of etiology[2].

Lymphocytic meningitis is described as a benign, self-limiting inflammation of the meninges. Usually the first symptom is headache, which is invariably severe. This is followed by nausea and vomiting and a rise in temperature, which varies (to some extent) with the severity of the disease, but is usually not high. In most cases the neck becomes rigid and Kernig's sign is positive. Epileptic attacks, delirium and coma may ensue. In some cases nystagmus and papilledema develop. The course of the disease varies widely with regard to both severity and duration. The average duration of the illness, however, is from one to three weeks. Usually the disease is characterized by an acute onset, a benign course, and a decline by lysis.

Abnormalities of the cerebrospinal fluid generally correspond to the severity of the symptoms. In an average case the initial pressure and the protein content may be increased (the latter moderately), but the sugar and chloride content usually remain normal. This finding distinguishes lymphocytic meningitis from tuberculous meningitis. As a rule the colloidal gold reaction is normal. Sometimes a fibrin clot forms in the withdrawn fluid. A characteristic feature is an increase of lymphocytes.

Case History

G. H. had his first attack of meningitis at the age of 6 years. Headache, nausea, vomiting, stiff neck and a positive Kernig sign were present, and there was a low grade fever, the temperature not rising over 100 degrees. There were no outstanding neurological findings other than those mentioned. The eye grounds were normal, and Dr. Frank Smith, who made an ophthalmological examination, reported no disturbance of vision. The lungs were normal. There were a number of little sores and rather acute adenitis

Read before the Mecklenburg County Medical Society, Charlotte, November 4, 1941.

1. Cecil, R. L.: A Textbook of Medicine, ed. 5. Philadelphia, W. B. Saunders, 1941, pp. 37, 146, 1470.
2. Skogland, J. E.: "Benign" Lymphocytic Meningitis, Minnesota Med. 22:462 (July) 1939.
3. Armstrong, C. and Lillie, R. D.: Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by a Virus Encountered in Studies of the 1933 St. Louis Encephalitis Epidemic.
4. (a) Brown, J. J.: Lymphocytic Choriomeningitis with Isolation of Virus, Ohio State M. J. 37:146 (February) 1941.
(b) Silcott, W. L. and Neubuerger, K.: Acute Lymphocytic Choriomeningitis, Am. J. M. Sc. 200:253 (August) 1940.
(c) Skogland, J. E. and Baker, A. B.: An Unusual Form of Lymphocytic Choriomeningitis, Arch. Neurol. and Psychiat. 42:507 (September) 1939.

in the groins, which was deemed to be the cause of the high lymphocyte count (20,000 cells). The patient appeared to be very much undernourished and showed some bony peculiarities, the significance of which, at that time, was not recognized.

The spinal fluid, during the illness, showed no increase in cell count, but was under slightly increased pressure. There were no significant changes in proteins and the fluid was clear. Repeated spinal fluid examinations for tubercle bacilli were negative and Wassermann tests were also negative. A diagnosis of serous meningitis was made. The spinal fluid drainage served to alleviate the symptoms as the disease ran its course.

After about a week all acute symptoms had abated. The patient was dismissed from the hospital and allowed to return home, to be kept under the observation of Dr. W. K. McGill, of Clover, South Carolina, by whom the patient had been referred.

As it appeared subsequently, the meningitis, in a sense, was not self-limiting. Some meningeal sequelae, in the form of headache and occasional rigidity, appeared at intervals for the next ten years. During this time the boy grew, not normally, but with an unusual elongation of the bones, especially of the hands and feet. He never had a well nourished appearance, owing to a lack of subcutaneous fat and undeveloped musculature.

At the age of 16, G. H. had another attack of meningitis heralded by headache, and he was again referred to the writer and placed in the Charlotte Memorial Hospital for investigation and treatment (Jan. 25, 1941). On this occasion his appearance was more striking than it had been ten years previously. He still looked undernourished and was poorly developed. He seemed critically ill but mentally sound. His physiognomy was peculiar, with prominent features, and he had extremely long fingers and toes (fig. 1) and a rachitic deformity to the right of the sternum. There was no apparent cardiac discomfort, and the diastolic sounds were of good quality. There was a "to and fro" friction rub at the apex. There were large right cervical nodes and shotty inguinal nodes. The liver, spleen and kidneys were not palpable. The genitalia showed hypoplasia. Kernig's sign was positive and there was a suggestive Babinski sign and general hypotonia. Superficial reflexes were present.

Fig. 1. Hands and feet of G. H. (aged 16).

Deep reflexes, though present, were of low amplitude.

The patient again manifested the ordinary symptoms of meningeal irritation but this time the eye grounds were so unusual that the findings could not be interpreted. Dr. Frank Smith, who had seen the boy in 1931 and reported the eye grounds negative, was called upon once more to interpret the findings. At this time he reported tremulous iris below in each eye. The fundi were difficult to see, because of refractive lenses, suggesting myopia. Dr. Smith reported ectopia of each lens, suggesting a diagnosis of Marfan's syndrome (arachnodactyly). This diagnosis proved to be correct.

It was open to speculation whether the two conditions (Marfan's syndrome and meningitis) could be linked together as cause and effect, or whether the simultaneous occurrence of these hitherto unallied diseases was purely coincidental.

Spinal fluid studies, which had been essentially normal during the acute attack in 1931, now produced some significant findings. There were 996 leukocytes, with 80

per cent lymphocytes; the protein content was elevated to 70 mg. per 100 cc., while the sugar was 80 mg.; and the gold chloride was 0000000000. The pressure was not increased.

Blood studies were not particularly significant. The leukocyte count was 12,000, with 14 per cent lymphocytes. A urinalysis showed a slight trace of sugar. The specific gravity was 1.026.

Instructions were given to make a laboratory examination for the virus of Armstrong and Lillie or its antibody, but the orders most regrettably were not carried out.

The high percentage of lymphocytes in the spinal fluid cell count at first suggested tuberculous or syphilitic meningitis, but as repeated examinations of the spinal fluid failed to show any tubercle bacilli, and spinal fluid Wassermann tests were negative (as in 1931), a diagnosis of lymphocytic meningitis was made.

Spinal fluid drainage, as before, appeared to alleviate the headache, and the patient made an uneventful recovery from acute disabling meningeal symptoms, his spinal fluid returning to normal.

Treatment consisted largely of high caloric diet, vitamins, and concentrated cod liver oil.

Discussion

The second illness of the patient here discussed has all the characteristics of that acute, benign disease of the central nervous system known as lymphocytic meningitis. The first attack lacked the high lymphocyte count. Both attacks were atypical in that there were meningeal sequelae.

It is conceded that some more or less chronic symptoms, chiefly headache, may have been due to visual disturbances; nevertheless the fact remains that this patient had two very definite acute attacks of meningitis.

While some cases of lymphocytic meningitis may be attributed to the virus of Armstrong[3], it has been suggested that a variety of etiological agents may bring about this condition[2]. In this particular case lymphocytic meningitis was found in association with Marfan's syndrome (arachnodactyly), a familial disease which had characteristically influenced the development of the patient's bony structures and musculature[5], and finally, in the lapse between his 1931 and 1941 attacks of meningitis, his eyes.

Although previous workers who on rare occasions suggested that Marfan's syndrome might conceivably affect the nervous system or its development[6] have met with opposition[5], and the theory has never been proved, it is difficult to escape the thought that in the case discussed the two conditions of Marfan's syndrome and meningitis might be linked together. Autopsy findings in such a case would be extremely instructive. Further discussion of the syndrome known as Marfan's and its possible effect upon the central nervous system will follow in a later paper.

5. *Burch, F. E.: Association of Ectopia Lentis with Arachnodactyly, Arch. Ophth. 15:645 (April) 1936.*

6. Moro: Ueber die Neurologischen Form der Arachnodactylie, Muenchen Med. Woch. 74:1071, 1940.

THROMBOPHLEBITIS: TREATMENT BY NOVOCAIN INJECTION OF THE SYMPATHETIC NERVES

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In April of 1940 my attention was called to the dangers attendant upon the complication of thrombophlebitis by the extremely serious condition of a patient I had operated upon. Her response to novocain injection of the lumbar sympathetics, and the response of other patients subsequently treated by this method led me to a study of the recent work which has been done on the subject. I shall review this work briefly and report the results obtained in 9 cases of my own.

Incidence

The incidence of thrombophlebitis varies greatly in different reports. Ochsner reports an incidence of .6 per cent in a series of 133,458 operations[1], while 24 per cent of the patients in a series of 2613 autopsies at the Wisconsin General Hospital were thought to show evidence of thrombosis.

This condition is believed to be on the increase. Among the explanations which have been offered for this fact is increased life expectancy, with subsequent survival of more people susceptible to thrombophlebitis. Ochsner thinks that the more widespread

Read before the Forsyth County Medical Society, Winston-Salem, October 14, 1941.

1. Ochsner, A., and deBakey, M.: Thrombophlebitis and Phlebothrombosis, South. Surgeon, 8:269 *(August) 1939.*

use of tobacco has led to an increased vascular irritability.

Eighty-three per cent of patients with thrombophlebitis are over 40 years of age, and 50 per cent are over 50. The sex ratio is the same[2].

There is a marked increase in the incidence of this disease in the fall and winter months. This is interpreted as being due to the prevalence of respiratory infections at this time. It may also be explained by the increased vasoconstriction due to the cold weather. The latter explanation seems more likely in view of the fact that the incidence in the North is much greater than that in the Southern states.

Etiology

Thrombophlebitis is more apt to occur in the fat, overweight, pale individual with low blood pressure, and in debilitated persons, especially those suffering from cancer. Cancer of the pancreas is often associated with thrombophlebitis.

Infections such as typhoid and influenza are definite predisposing factors. Pregnancy *per se* does not seem to predispose to thrombophlebitis, but the liability to infection in the puerperium does.

Trauma is one of the most potent factors, especially in pelvic surgery, where mass ligatures are often used. Constriction from tight abdominal binders, immobility of the patient —in fact, anything that impedes the circulation—must be considered a predisposing factor. Circulatory disturbances often play an important role.

Precipitating Factors

Of the precipitating factors vascular changes play a most important part. These include damage to the endothelial lining of the vessels, blood changes such as increased coagulability, increased viscosity, and hyperproteinemia. It is also thought that, because of changes in the blood, nonpathogenic bacteria which would normally be phagocytized may remain in the blood stream and become the nidus of a thrombus. Intravascular clotting may also be precipitated by recumbent posture, immobility, and complete relaxation of the extremities.

The lower extremities are more apt to be involved than the upper, because of greater retardation of the circulation. The left leg is involved twice as often as the right. The veins most apt to be affected are, in order, the deep femoro-iliacs, the deep veins of the calf, and veins which are varicosed.

The vascular changes may be divided into those involving the perivascular tissues and those involving the wall of the vein itself. Lymphangitis of the perivascular tissues leads to edema, and, if allowed to persist, to fibrosis.

In the wall of the vein the intima may be damaged, allowing cellular exudation to take place. This leads to the formation of a white clot, which is firmly attached to the wall of the vessel and consists of fibrin, leukocytes, and platelets. It differs markedly from the thrombus that is formed where there is no damage to the wall. This latter type of thrombus consists of whole blood and is red and very soft. It is the type that is liable to break away and become an embolus. The white thrombus rarely gives rise to embolism.

Physiology of Thrombophlebitis

For years it was commonly taught that the clinical manifestations of thrombophlebitis were due primarily to blockage of the venous system. That this explanation is not adequate is shown by the fact that a vein can be ligated without giving rise to the symptoms. Some years ago Matas[3] suggested that thrombophlebitis might be due to lymph stasis; later Leriche[4] showed that vasospasm is an important factor. McMasters[5] showed that the flow of lymph is dependent on arteriolar pulsations. Ochsner experimentally produced a chemical thrombophlebitis, and showed that the arteriolar pulsations were greatly diminished, and that swelling occurred[6]. Injections of the sympathetics prevented these manifestations, and when used after the swelling had taken place, tended to restore normal conditions. Because of this effect he feels that the clinical picture must be explained by disturbed physiology rather than on an anatomic-pathologic basis[7].

Normally the passage of fluids from the

2. Matas, Rudolph: Postoperative Thrombosis and Pulmonary Embolism Before and After Lister, Univ. Toronto M. Bull. 10:1, 1932.

3. Matas, Rudolph, cited by Ochsner and deBakey(7).
4. Leriche, cited by Ochsner and deBakey(7).
5. McMasters, cited by Ochsner and deBakey(7).
6. DeBakey, M.; Burch, G. E.; and Ochsner, A.: Effect of Chemical Irritation of Venous Segment on Peripheral Pu'se Volumes, Proc. Soc. Exper. Biol. and Med. 41:585 (June) 1939.
7. Ochsner, A., and deBakey, M.: Thrombophlebitis; Role of Vasospasm in the Production of Clinical Manifestations, J. A. M. A. 114:117 (January 18) 1940.

vein into the perivenous spaces is dependent on filtration pressure. The passage of fluids from the perivenous spaces back into the veins is the result of osmosis, plus the flow of lymph. Apparently, then, the mechanism is this: When the vein becomes the seat of a thrombus, vasoconstrictor impulses are set up. Venous spasm plus mechanical blockage of the vein increases the filtration pressure, and there is an increased exudation of fluids into the perivenous spaces. Arteriolar spasm then causes a slowing of the lymph flow. This results in an accumulation of fluid in the perivenous spaces, with increased hypoproteinemia. The osmotic pressure is increased until it is almost equal to that in the vein, and prevents the return of the lymph to the vessels.

Effect of Novocain Injection of the Sympathetics

When novocain is injected into the sympathetics the vasoconstrictor impulses are interrupted, and there is a decrease in venous pressure, with increased vascularity and increased peripheral pulsations. The decreased venous pressure results in decreased filtration pressure, and this tends to prevent transudation of fluids into the perivascular spaces. The increased oxygenation restores the normal permeability of the mucosa and this in turn prevents excessive transudation. Increased peripheral pulsations speed the flow of lymph, and so tend to remove the fluids from the perivascular spaces.

Diagnosis

Pain over the involved segment is the most constant finding. Low grade fever is almost always present, unless there is suppuration, in which case the temperature is hectic in type. Swelling is variable, and when present is made worse by the dependent position. If the deep veins are involved it is almost always present, but if the superficial veins are involved it may be absent. If the deep veins are involved the pallor and cyanosis may be so great as to lead to a diagnosis of arterial embolus. In deep vein involvement the temperature of the involved limb may be markedly lowered, and pulsations are greatly decreased.

Treatment

Heretofore the treatment of thrombophlebitis has been prophylactic, conservative, or radical. The prophylactic treatment consists in eliminating factors that tend to slow the circulation, and in preventing trauma. Some physicians have even placed a bicycle-like apparatus on the foot of the bed to give the patient exercise. Immobility of the patient must be combatted; tight abdominal binders eliminated. Heat to the abdomen, causing a vasodilatation, is thought to be of help. The conservative treatment consists in elevation and immobilization, plus heat. In a few cases where suppuration takes place, the radical treatment of ligating the veins has been employed.

The technique of novocain injection of the sympathetics has been adequately described by Ochsner and deBakey[8].

Results

Since April, 1940, we have treated 9 patients by novocain injection of the lumbar sympathetics, with excellent results. All were immediately relieved of pain. Swelling was not affected as a rule until three or four days after the first injection. The temperature subsided in two to five days. All patients required from two to four injections. The age of the patients ranged from 32 to 75. All but 2 cases were postoperative. Residual swelling was present after six months in two patients. The first case was the most spectacular, and I should like to report it in detail.

Case Report

A white female, aged 32, was admitted to the hospital suffering from a non-toxic colloid adenoma of the thyroid, and a marked retroversion of the uterus. A suspension was performed on March 30, 1940, and a thyroidectomy was scheduled for April 4, but was postponed one day because the patient had fever. The operation was performed on April 5, and by April 14 there was marked abdominal pain, pain in the left thigh, and elevation of temperature. On April 18 definite pelvic and femoro-iliac thrombophlebitis had developed on the left side. Between April 18 and 24 the patient had numerous transfusions and was treated with sulfa-

8. Ochsner, A. and deBakey, M.: Treatment of Thrombophlebitis by Novocain Block of the Sympathetics; Technique of Injection, Surgery, 5:491 (April) 1939; Peripheral Vascular Disease, Critical Survey of Its Conservative and Radical Treatment, Surg., Gynec. and Obst. 70: 1058 (June) 1940; Role of Vasospasm in Thrombophlebitis and Its Treatment by Novocain Block of the Sympathetics, Tri-State M. J. 13:2634 (January) 1941.

pyridine. Her condition gradually became worse, however.

On April 24 novocain was injected into the left lumbar sympathetics. Immediately following injection, before the patient left the operating room, she stated that she felt much better. By evening her temperature had dropped to 99 F.

On April 25 the injection was repeated. No change was noted in the swelling of the thigh and calf, the left thigh still measuring four inches greater than the right in circumference. On April 27 the temperature still remained around 99 F., but there was much less swelling. The injection was repeated.

On April 30 the temperature was normal. The patient was discharged on May 5, her thighs practically equal in size. She was examined again on June 4, and no residual symptoms were noted.

Summary

1. The incidence, etiology, and treatment of thrombophlebitis have been discussed.

2. The mechanism of relief of thrombophlebitis by novocain injection of the lumbar sympathetics is given.

3. The results of novocain injections in 9 cases of thrombophlebitis are given, the first case being reported in detail.

Psychotherapy for Depressed Patients—The patient who is depressed needs the comforting reassurance of his fellow men and women. He is eager to unburden his sufferings to all who will listen to him, yet frequently he is met with jeers and ridicule and sarcasm: "Oh, forget about it. Snap out of it, there is nothing wrong with you." These remarks are verbal darts which will become embedded even more painfully in the soul of the patient. He recognizes that he does not wish to be ill; he would like to be free of the torment of a saddened mood. He needs sympathy. Remember that the depressed patient is really sick.

The doctor in charge of a depressed patient should encourage him to talk. As a tool of psychotherapy, listening is far more effective than lecturing. Formal psychoanalysis, however, is to be discouraged because, during this treatment, the ego is revealed in an unpleasant light and the further depression of the ego may precipitate suicide.

Within the scope of psychotherapy, one may include reassurance, encouragement, guidance as to activity, and various occupational programs. Along with sympathetic listening, the physician and nurse should attempt to give hope by repeating words of encouragement as to recovery and a happier future. Patients need such encouragement and are temporarily relieved by words of cheer.—Joseph L. Fetterman: The Nature and Modern Treatment of Depressions, Ohio State M. J. 37:858 (September) 1941.

TREATMENT OF FACIAL PARALYSIS

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It is difficult to discuss the treatment of facial paralysis without giving some consideration to the causes of paralysis. A knowledge of etiology aids the physician in locating the exact site of the lesion producing the paralysis.

For convenience, the forms of facial paralysis may be classified as central and peripheral. The central type includes those forms of paralysis in which the lesion involves the pons above the facial nucleus. The peripheral type includes lesions in the nucleus or along the course of the nerve distal to it. The central type does not fall within the scope of the otologist but it should be eliminated in every case before treatment is started, as the procedures employed in treating the two types, are, of course, entirely different.

Rosenbeck has given us a workable method of differentiating the two types of paralysis. He says, "In the central type the paralysis may be bilateral; if it is unilateral, only the lower half of the face is paralyzed, the upper half escaping. In the peripheral type, the paralysis is always unilateral and the entire side of the face is involved. That the upper half of the face escapes in the central type, is due to the fact that, in this part of the face there are muscles which act bilaterally and have representation on both sides of the cortex, so that, if the disease affects one side, the other side continues to function. In the lower half of the face, the muscles are strictly unilateral and are unilaterally represented in the cortex."

The site of a peripheral lesion can be fairly definitely located, especially if it is limited. It goes without saying that the surgeon should not attempt to treat a paralysis resulting from an intracranial tumor by the same method that he would treat paralysis resulting from an injury in the facial canal.

Involvement of the seventh nerve inside the cranium—that is, between the pons and the geniculate ganglion—is associated with a disturbance of function of the eighth nerve as well, which causes deafness on the corresponding side. Tumors of the eighth nerve

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or cerebellopontile angle tumors would also give rise to deafness and facial paralysis.

Involvement of the geniculate ganglion alone results in a group of symptoms known as Hunt's syndrome. In addition to facial paralysis, there is a herpetic eruption in the external auditory canal and outer ear, with severe local neuralgic pains. There may be tinnitus, deafness, nystagmus or nausea in varying degrees.

In case the lesion is between the geniculate ganglion and the branch to the stapedius muscle the patient is disturbed by a severe tinnitus and hyperacusis.

If the lesion is in the canal above the point at which the chorda tympani leaves the nerve and below the branch to the stapedius the sense of taste in the anterior two thirds of the tongue is affected on the corresponding side. The patient may also complain of an excessive flow of saliva.

Let us suppose that in a given case the otologist has located the lesion along the course of the facial canal. What then is to be done for the patient? In the first place, such a paralysis is most likely to be caused by one of three conditions—namely, Bell's palsy; swelling from an adjacent ear or mastoid infection; or an injury due to a mastoid operation. The history of the case usually aids greatly in the differentiation.

Bell's palsy usually comes without any evident cause, and frequently is seen following exposure of the face to drafts or following a nervous shock or nervous state. In the second condition (paralysis due to extension of infection) there is a history of either an acute or chronic ear infection. The third condition immediately follows a mastoid operation.

The prognosis in the majority of cases of Bell's palsy is good, and recovery is spontaneous in a large percentage of them. It must not be forgotten, however, that some of these patients have residual symptoms and a few have a permanent paralysis remaining, along with a twitching which is very annoying to the patient. It should not be taken for granted, therefore, that a case of Bell's palsy will spontaneously recover. A definite course of treatment should be instituted in order to assist nature as much as possible in restoring normal function to the face.

The treatment for the first ten days should consist of rest, heat either by compress or diathermy, and strychnine and iodides internally. After the first ten days, galvanic stimulation should be started in order to prevent muscle atrophy, and the patient should be encouraged in efforts at voluntary movements of the face before a mirror.

Recovery may be complete in a few weeks or improvement may be slow for a period of six or eight months. In some cases, a considerable degree of paralysis may be permanent.

If at the end of three months the results are unsatisfactory, there is only one thing left to do; that is, to uncover the seventh nerve in the facial canal, and split the nerve sheath. This has been done repeatedly by the late Dr. Duel of New York, with very splendid results in cases in which muscle atrophy had not destroyed the facial muscles.

The cases of facial paralysis due to infection adjacent to the facial canal require prompt surgery. These patients usually recover promptly after either a simple or a radical mastoidectomy, depending upon the indications.

The third common cause of facial paralysis—injury due to operative procedures—is a surgical calamity which is fortunately rare. Any surgeon performing mastoid operations always runs the risk of causing this unfortunate accident, however. It is commonly believed that damage to the facial nerve occurs only in radical mastoid operations. Duel found, however, in repairing approximately one hundred such cases, that nerve injuries occurred more often in simple mastoidectomies than in radical.

There are two points at which such an injury occurs. The site most frequently involved is inferior to the mastoid antrum. In a case in which the antrum is small and the bone is sclerotic, the surgeon becomes disoriented and bores into the facial canal in his efforts to find the antrum. The accident is seldom recognized at the time it occurs. The second point at which damage occurs to the nerve is beneath or medial to the aditus ad antrum. In removing the bridge, the surgeon may cut the nerve, or more likely depress the bony wall against the nerve. The covering of the nerve at this point is much thinner than in other parts of the canal, thus making this mishap more likely to happen at this point.

Surgical injury of the nerve gives a total paralysis of the corresponding side of the face which is evident as soon as the patient

awakes. Postoperative paralysis from other causes usually comes on a few hours or days after operation.

Previous to the work of Duel and Ballance, there was very little to be done in the treatment of these cases. They were either left alone to develop extreme sagging of the paralyzed side, or the distal end of the facial nerve was anastomosed to one of the cervical nerves. The latter procedure was entirely unsatisfactory because in cases where the graft was successful, there were uncoordinated movements and paralysis of some muscle or group of muscles. The anastomosis operation was never the answer to traumatic facial paralysis.

Duel introduced to this country the autogenous nerve transplant in these cases. This operation consists in uncovering the facial nerve from the stylomastoid foramen upward beyond the point of injury. After the injured portion of the nerve has been found, and the damaged distal and proximal ends trimmed away, a transplant from the anterior cutaneous branch of the femoral nerve is laid into the gap. The transplant is covered with gold or platinum foil beyond the junctions, and the wound is packed with pieces of tape.

It is preferable to prepare the nerve in the thigh three weeks before the transplant is made. This preparation consists of identifying the nerve three inches below the groin and severing it. A very fine silver wire is attached to the distal end in order that it may be easily identified at the time of the operation. This procedure is carried out in order that wallerian degeneration may occur in the distal part of the nerve and only the neurilemma be left at the time of the transplantation. This degenerated nerve simply acts as multiple conduits for the axis-cylinders which grow out from the proximal end. In successful cases, six months are required for this extension of the axis-cylinders to their terminals in the muscles. Therefore, no improvement may be expected in a successful case sooner than six months after the operation. In successful cases, almost normal motion is restored in the lower part of the face. The patients are able to close the eye, but no motion is restored in the forehead. Probably the most important result of the entire operation is the restoration of muscle tone in the face, which eliminates the sagging appearance of the face and the progressive atrophy of the muscles.

This operation has been a great blessing to patients unfortunate enough to have this accident, and should certainly be performed on such patients, at least within six months following the injury. If the surgeon is aware at the time that he has cut the nerve, the repair should, of course, be done at once.

This operation is extremely difficult and tedious, and should not be attempted by surgeons until they have had some instruction by a preceptor and considerable practice on fresh autopsy material. The patients have very little reaction to this operation ordinarily, but the dissection goes extremely close to the horizontal semicircular canal and to the cochlea. In case either of these should be opened, the patient would probably develop meningitis. It is hoped that this operation will not be brought into disrepute by being done poorly.

303 Hume Mansur Building.

THE IMPORTANCE OF RECOGNIZING FUNDUS PATHOLOGY

C. R. MILLS, M. D.

GREENSBORO

Recognizing fundus pathology and knowing how to treat it are among the most important duties that the ophthalmologist has to perform. In this country there are many, many people who have become blind in one or both eyes because they had "eye trouble" and put their faith in the diagnosis of someone who was not sure of what he saw. It behooves all of us to be absolutely sure of what our examination reveals, and if we are not sure to get the opinion of another specialist before treating someone for a condition that he may not have.

In the last year and a half I have been very much impressed with the tragedies that can result from our human errors in diagnosis. An 81 year old woman had her glasses changed by a doctor who told her that she had glaucoma in both eyes and might go blind if she were not operated upon right away. Her cornea was clear, her anterior chamber was of normal depth, her disc cuppings were physiological, her finger tension and tonometer readings were in the normal limits, and her fields for white, blue, red and green were full. She did not have glaucoma.

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Another woman went to see her family doctor because she was nervous and run down from worry over her eyesight. She had been told that she had chronic glaucoma in both eyes, and she had been putting several drops of pilocarpine in her eyes daily for eight months. Examination revealed perfectly normal eyes except for a refractive error. After her mind was relieved and the drops discontinued, she had a new lease on life.

A man 30 years old was brought to me with a history of a diseased eye which he had had for two years. He had been hospitalized several times for fever treatments and had been given sulfathiazole. Slit-lamp examination revealed an acute interstitial keratitis. His blood Wassermann was negative, but there was a history of a chancre seven years previously, followed by antiluetic treatment. I began giving him extensive anti-luetic treatment right away, and his eye started to clear up within a few days. In three weeks it was perfectly normal again. A spinal Kahn test was positive. If the fibers of his optic nerve can stand it, he will also be given a course of tryparsamide.

I recently resected an extensive conjunctival papilloma from the entire conjunctival surface of the left upper and lower eyelids of a boy 4 years old. A year ago, when the growth was first noticed, he was seen by another doctor, who advised the family to wait eight or twelve months to see what would happen. It is too early yet to determine whether or not he will have any scar tissue on his lids, but if he had had the papilloma removed a year ago he would have had a better chance for a complete recovery and the chances of its becoming malignant would have been lessened.

These are only a few of the cases I have seen in which an incorrect diagnosis had previously been made. I do not doubt that some of you here could tell about a number of patients that I have seen and mis-diagnosed, because I am only human, too.

I should like to show some slides illustrating normal and pathological fundi. Figure 1 is a normal fundus. Figure 2 is the fundus of a patient who would probably complain of progressive loss of vision in one eye over a period of a few days. The edema around the nerve head, the hemorrhage, and most important of all, the exudates, which

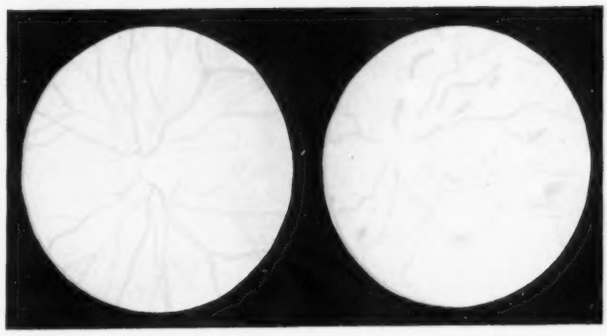

Fig. 1 Fig. 2

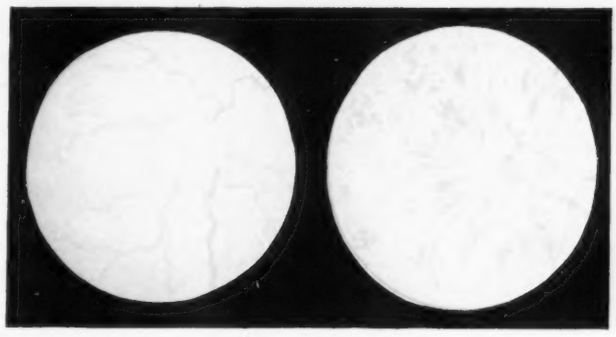

Fig. 3 Fig. 4

are present in an eyeball only when there is an infection, all point to neuroretinitis.

The patient with this case of papilledema (fig. 3) would probably have headaches, and possibly a partial paralysis on one side, but would have no loss of vision. There is elevation of the disc, and the typical edema and spreading out of the nerve head. Although they do not show up in the picture, you would see quite a few hemorrhages. There are no exudates. There is no reason why this case should be interpreted as neuroretinitis.

Figure 4 illustrates a type of pathology in which the patient would become blind fairly rapidly over a period of a few days. There is edema around the nerve head, and many hemorrhages. The tortuous and distended veins and arteries are almost obliterated. There is no exudate. There is no excuse for failing to recognize this case as a thrombosis of the central vein.

Case Reports

I should like to report 2 cases of neuroretinitis.

Case 1. W. D. H., a white male 24 years old, came in to see me in September, 1939, just before making final arrangements to go to Richmond to see a brain specialist. He had just been told by another physician that he had a brain tumor, and had better go to

Richmond at once. The family wanted another opinion, so they brought him to me. He gave a history of a gradual loss of vision in his left eye beginning ten days previously. Vision in his right eye was 20/20 and in his left 20/400. Ophthalmoscopic examination of the left eye revealed a typical case of neuroretinitis with the usual edema, hemorrhages, and exudates. Just above the macula there was a large exudate about the size of two disc diameters. Visual fields of the right eye were full. X-ray examination of his teeth was negative, but he had some infected tonsil remnants. I explained to the family that I was fairly certain he did not have a brain tumor, and that his chances for recovery of much vision were not too good. He was hospitalized for twenty-four hours, during which time we began local treatment. A surgeon in Greensboro, who knew the family well, helped me with the case. He asked me about the chances for recovering much vision, and I told him that when an infection is present in the optic nerve as long as ten days there is bound to be some permanent damage, even if the focus of infection can be removed right away. He advised me to send the patient to Baltimore, because the man was of a prominent family and I had not been established in Greensboro very long. I sent him to Dr. Bagley in Baltimore. He stayed there several weeks, during which time his eye was treated and his infected tonsil remnants were removed. After he came back to Greensboro I kept his pupil dilated, gave him sulfanilamide, and had hot packs applied to the eye. Two months after the onset of his infection he had 20/20 vision in that eye. That is the most remarkable recovery of vision I have ever seen with an infection of that kind.

Case 2. C. W. H., a 32 year old white male, came in to me in the summer of 1940 complaining of blurred vision in his left eye for a week. He had 20/20 vision in his right eye and 20/50 in his left eye. Fundus examination revealed a typical neuroretinitis. A general medical examination gave no relevant findings. X-ray examination of his teeth showed one dead tooth with a suspicious shadow at the root. His tonsils were examined by two physicians, who stated that they did not seem to be infected. These doctors also looked in his eye and made a diagnosis of thrombosis of the central vein, and said that removal of the tonsils and bad tooth would not do the eye any good. However, the patient consented to the removal of his tooth and tonsils. His tooth had quite a large pus sac on the end of it. After the operation I started treating his eye locally and gave him sulfanilamide. His recovery was held back a little by a large hemorrhage which he had soon after his tonsils were removed. One month after I first saw him, his vision was 20/15, and he has had no trouble with the eye since.

Summary

I have not intended in this talk to disparage any physician for making mistakes now and then. We are all human and are bound to make an incorrect diagnosis sometimes. Diagnosing fundus pathology is not easy, and it is essential for us to be sure of what we see when we look into an eyeball. Our mistake may be the cause of some individual's having to carry a white cane the rest of his life.

INSTRUCTION VERSUS SERVICE IN THE HEALTH PROGRAM

P. Y. GREENE, M. D.
Alamance County Health Officer
GRAHAM

All of us will agree that the majority of health workers in North Carolina are not pedagogists, either by training or by aptitude. Certainly we spent the greater part of our time during our professional training period learning to be doctors, nurses, or sanitarians. To most of us that meant learning how to size up a situation so that we could render the proper service. How often we have told the patient, or if we did not tell him, have said to ourselves: "This is the type of service you need; it matters not what your feeling is." In the practice of medicine —that is, that phase of medicine that deals with a sick patient—to assume such an attitude may assist the patient to a more rapid recovery; but even then how often we see recurrence of the same condition because the patient had not been taught *prevention.* We who are workers in preventive medicine defeat our own purpose if we do not teach the individual as we serve him. I do not contend that all services have an educational value; however, many do. It is our responsibility

Read before the Health Officers Section of the North Carolina Public Health Association, Pinehurst, May 19, 1941.

to make the public understand the purpose of each such service. Let us assume that such services have a primary and secondary purpose: the first, to accomplish a certain aim; the second, to teach the individual some principle of public health.

One of our first duties as health officers is to enforce the quarantine regulations. When we visit a patient suffering from a communicable disease our primary purpose is to quarantine the patient and to make an epidemiological investigation; equally important is to teach the patient and his family how they may prevent the spread of this and other communicable diseases. Two years ago a patient from Alamance County was sent to a hospital outside of the county, where a diagnosis of typhoid fever was made. The case was not reported to the Health Department, nor was the family acquainted with the seriousness of the disease. The result was that four other members of the family were treated at public expense, since the Health Department was not given an opportunity to make an epidemiological investigation and to instruct the other members of the family in the control and prevention of this disease.

Another of our duties is to administer immunizing agents. Obviously, the primary purpose of this is to prevent a particular disease. It is well to make a patient aware that he is not only protecting himself, but that he is building up a "block" that will contribute to the protection of other individuals of the community.

A considerable portion of the time of my staff during the past three years has been devoted to the control of venereal diseases, with special emphasis on syphilis. I am sure that this is the case throughout the state. As judged by the usual standards our program is far from adequate; however, we have been able to accomplish a great deal during this period. One of our best means of "holding" patients is through instruction given the patient, calling attention to the probability of complications and the necessity of taking treatments regularly.

For six or seven years prior to the establishment of the Alamance County Health Department, the Service League of Burlington conducted a syphilis clinic in Burlington. When the Health Department was established, we took over this clinic. The records turned over to us at that time showed that most patients had received from six to twenty-five treatments; few had had more than this number. Most of the patients were domestic servants. About all they knew about the disease for which they were being treated was that they had "bad blood" and that in some mystic way it interfered with cooking and caring for children. It was the rule rather than the exception for these patients to discontinue treatment when unemployed, or while doing other work. If the patient became pregnant, she usually dropped out of the clinic. Those patients who progressed to a stage where the serological test gave a negative result were given a rest period.

By constant emphasis upon the purpose of treatment, the general morale of this clinic has been greatly improved. Attendance is fair, and often patients without request bring to the clinic for examination other members of the family or friends. While we do not wish to boast of our syphilis control program, we do know that we would be in far worse shape had we not gained the patients' cooperation largely through personal instruction and advice.

One of our most pressing problems is the control of tuberculosis. This is one of the best fields in which to join education and service. Probably more than 50 per cent of the new cases of tuberculosis in Alamance County are discovered by the epidemiological studies and examinations made by the Health Department. The Public Health Nurse visits a newly discovered case of tuberculosis primarily for the purpose of rounding up contacts. However, the instructions that she gives the patient may be vastly more important. How often we have seen other members of a family develop this disease because we did not do a thorough job in instructing the patient in the simple methods of prevention. In Alamance County since the first of this year we have given more than 2900 tuberculin tests and have had more than 900 individuals x-rayed. If in rendering these services we have failed to teach them something about the seriousness of the disease and its prevention, much of our work has been done in vain.

Thus far in Alamance we have not developed a very extensive maternal and infant health program. However, we have had one experience which shows that instruction is necessary along with the rendering of service if good results are to be obtained.

For a number of years a lay group of Burlington has been conducting a white baby clinic, assisted by a local pediatrician and a Red Cross nurse. Last fall they decided to establish a Negro baby clinic. We agreed that they might hold the clinic in our Burlington office provided one of our nurses would be permitted to assist at the clinic, if for no other purpose than to keep watch over our equipment. The nurse who was assigned to the clinic was instructed not to neglect a single opportunity to give public health instruction. Six months later the pediatrician in charge was so impressed with the results of the Negro baby clinic as compared with the progress of the white baby clinic that he asked the clinic sponsors to approach us on the subject of permitting them to move the white baby clinic to our office, so that it might be conducted in like manner.

Most of us are more or less dissatisfied with our school program; we trust that when Dr. Wilkins and his group have completed their study we will be in a position to carry out a more effective program. Here, of all places, it seems to me, our services should be instructive. Our school program in Alamance consists of periodical inspection of all school children (in most instances this means once a year); a thorough examination of all children of the first and sixth grades; and a dental program for twenty weeks each year carried out by a representative of the Division of Oral Hygiene of the State Board of Health.

We have a school population in Alamance of approximately 13,000. In doing routine inspections if we fail to get across to the teacher and the child methods of determining minor defects, the time spent is wasted, since we actually see the child at such infrequent intervals.

The school examination is a more detailed inspection, and since we must depend on the private physician to correct the defects found, we must make clear their seriousness and advise the parents as to the best methods of correction. All of us realize the importance of having the parents present during these examinations, in order that we may point out to them the defects and explain the effect that these might have on the child's future health. During these examinations, I keep on hand an assortment of pamphlets. In addition to discussing the child's condition, I give the parent a pamphlet concerning that particular condition, in the hope that they will read it and realize the urgency of carrying out my recommendations.

We are all familiar with the emphasis the Division of Oral Hygiene places on "instruction together with service".

Finally, let us not forget the services rendered by the sanitarian. Much more can be accomplished if the sanitarian is careful to show the individual why he is to carry out certain measures, rather than making a formal inspection and telling him that he *has* to carry them out.

It has been our experience that cafe operators, plumbers, and other laymen are all ready to cooperate when they are shown the advisability of making a certain change.

When the new market regulations came out we endeavored to show the proprietor that hot water, cutting blocks, refrigeration, and other improvements would make his work easier, and would probably increase the sale of his products, at the same time that they enabled him to meet the sanitary requirements. After making the necessary changes many of these individuals expressed themselves as wishing they had made these improvements before.

In conclusion, I should like to state my belief that there is no real conflict between service and education in public health work. It is up to health workers to render health services in such a way that they have educational value.

Abstract of Discussion

Dr. R. L. Carlton (Winston-Salem): I am convinced that Dr. Greene has correct ideas about health education and that he is applying those ideas in the work of his department.

Many years ago I arrived at the conclusion that many, if not all, the activities and services of a health department have educational value; certainly if the service itself does not have educational value it does present an opportunity for instruction which should not be overlooked.

I have tried to impress on the members of the Winston-Salem health department that every service—whether it be delivering a birth certificate to the mother of a new baby, a visit to quarantine a case of measles, a visit in the interest of a well baby clinic, an inspector's visit to a food handling place, the serving of a notice to abate a nuisance, or a call on a delinquent venereal disease patient—can be made to have an educational value if the worker will realize his responsibility and make the most of it.

The nurse who makes a prenatal visit or who calls on the mother of a new baby may perform a small service so far as actual work is concerned, but she may leave with the mother a booklet on prenatal care, or one on infant or child care, or she

may point out the wisdom of taking the baby to the clinic or to the family doctor for a check-up; and such instruction may be of great value to members of that family. The very fact that communicable diseases are reportable and that an epidemiological investigation is made and a great many questions are asked and recorded in the presence of the family is convincing evidence to those people that the disease is important and that not only should something be done about that particular case, but steps must be taken to prevent further spread of it.

It seems that health education as a project of health department practice still needs much talk, much clear thinking, and most of all, much doing. Every health officer who has been in public health work for some years realizes this need. Ask your nurses about the homes they visit. They will tell you that many mothers still think their children "should get catching diseases early to get them over with;" that people still believe tuberculosis to be inherited. Young men still tell each other that gonorrhea is no worse than a cold; filth is commonly thought to be the cause of disease; and mothers-to-be are still told that they must lose a tooth for every child.

Such misinformation must be combatted. The lies and half truths of many advertisers, faddists and propagandists must be exposed. The obstacle of indifference must be overcome. Well informed persons still fail to demand clean pasteurized milk. Intelligent mothers still neglect the vaccination of their children against smallpox or their immunization against diphtheria, even though we have a North Carolina law making such procedures compulsory. Parents still fail to take their children to a doctor or a dentist (or to go themselves) unless they have an ache or a pain.

All this superstition, misinformation and indifference is a challenge to health departments all over North Carolina. Just why has health instruction been so largely neglected? For neglected it has been in my own department and I am reasonably sure it has been in others too.

We make excuses and do not tackle the job. We all want to be efficient health officers; and we will be if we see the whole program and put our souls into each part of it.

None of us have the funds we would like to have and should have for carrying on a health education program. Is that a very valid reason for our own neglect? Why do we get funds to carry on diphtheria immunization? Because we believe in its value and we have convinced the public and the appropriating boards. Why **don't** we get funds for health education? I wonder if it is because we ourselves are not sufficiently sold on the proposition to sell it to our boards. There has never been keener popular interest in health subjects than now. The vendors of all sorts of articles—underwear, lemons, tooth-brushes, galoshes — are playing the health motive hard. Never was sound advice upon a few simple health rules more needed than this day. Some one is going to meet this demand. The public should look to the health agencies and the medical profession for health guidance. If health officers do not meet this obligation we lose out. I believe that this matter of health education is not difficult. And I believe that it will be a well established function of all our departments when health officers generally are convinced that it is really necessary, practical and productive of many good results.

All of which I have said by way of emphasis and commendation of Dr. Greene's good paper and of the fine work he is doing in Alamance County.

URETERAL ECTOPIA

WALTER E. DANIEL, M. D.

CHARLOTTE

Partial or complete duplication of one or both ureters is comparatively common. It is encountered so frequently that no one bothers to report such cases any more. It is estimated that it occurs in 3 to 4 per cent of the cases that come to pyelography and autopsy[1]. When the duplication is complete, the two ureteral orifices are usually located on the ureteric ridge of the bladder, one above the other, the ureter draining the upper pelvis opening lower in the bladder, and vice versa (Weigert's law). Consequently, the ureter draining the upper pelvis is always the one opening ectopically.

Ureteral ectopia is relatively rare. In 1930, Sargent[2] was able to collect only 186 cases from the literature. In 1937, Furness[3] was able to find 240 cases. It is reported to occur about twice as often in females as in males. This ratio may be more apparent than real, since in men the ectopic ureteral opening is usually located in the prostatic urethra or the seminal vesicle, and incontinence of urine does not result. The diagnosis is also more difficult in men for reasons that are obvious.

Incontinence of urine is the usual symptom that causes these patients to seek relief. The incontinence is characteristic in that there is a constant dribbling of urine in spite of normal bladder function. When partial obstruction of the ectopic opening is present —and it usually is—, it causes one-sided abdominal pain and symptoms referable to the gastro-intestinal tract. In 40 cases of ureteral duplication with obstruction or infection, or both, Campbell[4] found that 30 patients had gastro-intestinal disturbances. In a few of these patients, such disturbances were paramount.

When infection occurs in that portion of the kidney drained by an ectopic ureter, chills and fever must be added to the list of symptoms.

Submitted for publication November 24, 1941.
From the Thompson-Daniel Clinic.

1. Baines, G. H.: Supernumerary and Ectopic Ureters; Carcinoma of a Double Kidney with Ectopia of One Ureter, Brit. J. Surg. 28:314 (October) 1940.
2. Sargent, Janus C.: Ureteral Ectopia, J. Urology 23:357 (March) 1930.
3. McKay, H. W.: Incontinence of Urine Due to Ectopic Vaginal Ureter, South. M. J. 30:579 (June) 1937.
4. Campbell, M. F.: Resection of the Kidney, J. A. M. A. 117:1223 (October) 1941.

With the present methods of diagnosis, the true condition of the urinary tract can usually be determined. The history of this characteristic type of urinary incontinence will put the examiner on guard. By careful inspection of the urethra, vaginal vestibule, and vagina, one can usually locate the ectopic orifice. The intravenous administration of indigo carmine may help in locating the opening. However, if obstruction with resulting hydroureter and hydronephrosis is present, the kidney function may be so much impaired that the dye is not excreted in sufficient quantity to color the urine. In such cases, no help is derived from this procedure. Likewise, intravenous urography would be of no value, as the damaged kidney would not excrete the iodide. The most satisfactory method is to locate the orifice by careful inspection. The opening can then be catheterized and retrograde pyelography done. It frequently happens that the catheter can be passed only 2-3 cm. up this ureter, because of kinking, stricture, or mucosal folds. Even so, enough iodide can usually be injected to outline the ureter. Then retrograde or intravenous urography can be used to outline the remainder of the urinary tract.

In men the diagnosis is much more difficult, as they usually do not have urinary incontinence. This probably explains the fact that in men the diagnosis is usually made at autopsy.

In the reported cases the treatment has consisted of nephrectomy, heminephrectomy with and without ureterectomy, vaginal and abdominal ureteral ligation, and re-implantation of the ureter into the bladder. Nephrectomy, of course, cures all cases, but it sacrifices the uninvolved half of the kidney. Vaginal and abdominal ligation of the ureter is successful in about 50 per cent of the cases. Re-implantation of the ureter into the bladder is a formidable procedure and a hazardous one, especially since these transplanted ureters frequently become dilated and infected, necessitating a later operation. Heminephrectomy seems to be the most rational treatment, as the offending segment of the kidney is removed, leaving the undiseased portion. When the ureter is dilated and infected, it, too, should be removed, although I believe its removal down to the pelvic brim will usually suffice.

Case Report

A white female, aged 5 years, was brought to the hospital by her mother, who acted as the informant. The mother stated that since birth the patient had had incontinence of urine. She voided normally without pain, in spite of which there was a constant dribbling of urine. The voided urine was amber colored, while the drainage was perfectly clear and colorless, and did not stain the pads which the patient, of necessity, wore. The child also complained occasionally of dull pain in the left side of the abdomen and was subject to frequent gastro-intestinal upsets consisting of generalized abdominal discomfort and distention.

On physical examination there was no abdominal tenderness, and neither kidney was palpable. The external genitalia were moist and clear water could be seen trickling from the vagina. The catheterized urine was amber, clear, and negative. With the use of a Kelly clamp as a vaginal speculum, a small opening was seen on the roof of the vagina about 2 cm. inside the introitus. The opening was catheterized with a No. 4 ureteral catheter, which met an impassable obstruction 4 cm. from the orifice. However, the catheter drained clear, colorless urine which was negative microscopically.

Twenty-five cubic centimeters of 20 per cent skiodan were injected through the catheter and an x-ray plate was taken which showed the ureter to be greatly dilated, kinked, and tortuous throughout its entire length. It ended in a large rounded bulb in the region of the upper pole of the left kidney (fig. 1). Intravenous urography was performed and it showed the right kidney pelvis and ureter to be well filled and normal. The lower pelvis of the left kidney, together with its ureter, was likewise well filled and normal (fig. 2).

First operation: Under general anesthesia with the patient in the kidney position, the left kidney was exposed. The upper half of this kidney was soft and obviously just a dilated sac, while the lower half was firm and normal in appearance. The upper half did not have a separate blood supply. The large dilated ureter draining the upper segment of the kidney was divided and ligated with No. 1 chromic catgut. The proximal end of this ureter was anchored with one catgut suture to the undersurface of the muscles at the posterior end of the incision. The wound was then closed.

Following operation, the patient ran a very high fever, which was not of the septic

Fig. 1. Retrograde pyeloureterogram of the ectopic ureter. Note the marked dilatation, kinking, and tortuosity.

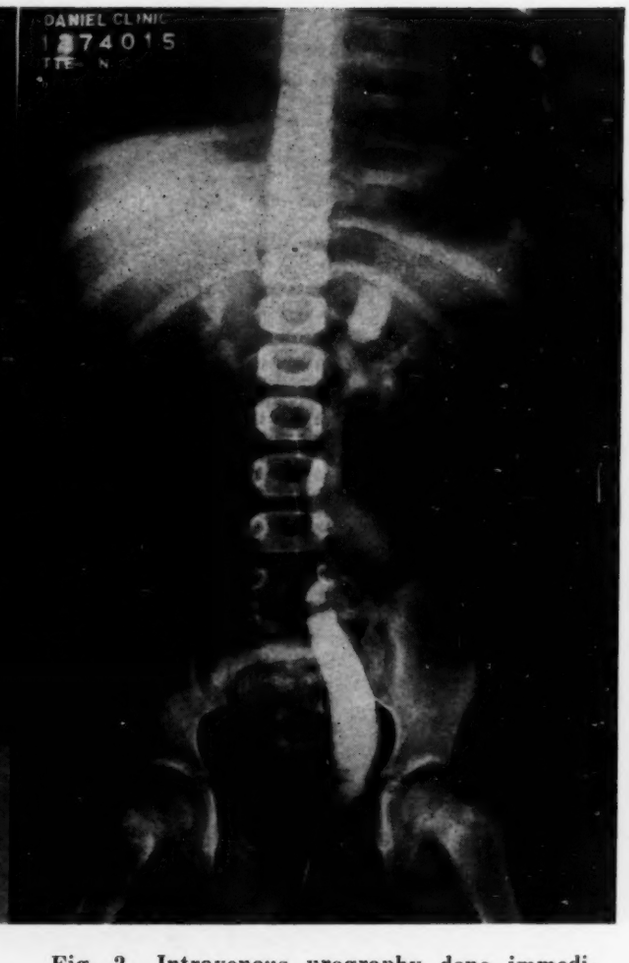

Fig. 2. Intravenous urography done immediately after the retrograde pyeloureterogram (fig. 1). The right kidney and ureter are well filled and normal. The lower half of the left kidney is also normal.

type. She took food poorly and had much trouble with abdominal distention. The white blood cell counts ranged from 15,000 to 32,000. Twelve days after operation, urine began to drain from the posterior end of the incision. Immediately the fever and abdominal distention disappeared. The patient was discharged and told to return later for a second operation.

Second operation: Six weeks later, under general anesthesia, the left kidney was again exposed. The upper segment was even more greatly dilated than on the first examination. Heminephrectomy was considered, but a line of cleavage could not be found. We were afraid of causing hemorrhage and of injuring the blood supply to the lower half of the kidney. Nephrectomy was carried out and the dilated ureter was removed down to the pelvic brim.

The patient made an uneventful recovery. She was last seen eight months after operation. She was feeling well and had gained weight. The incision was firm. The urine was clear and negative.

From the history in this case, it was suspected that there was an ectopic ureteral orifice. It was also concluded that this ureter was markedly dilated and drained a functionless segment of the kidney. This conclusion was based on the fact that the drainage was clear and colorless and did not stain the pads. Because of the left-sided abdominal pain, the left kidney was indicted.

From the review of the literature and our observations on this case, we do not feel that ureteral ligation should be carried out in the presence of ureteral dilatation or infection. Retroperitoneal ligation should probably never be tried, since there are 50 per cent failures and any later operation is rendered more hazardous for the patient and more difficult for the surgeon. On the other hand, vaginal ligations are quite simple and possess all the advantages and none of the

disadvantages of retroperitoneal ligation. If this procedure fails, heminephrectomy or nephrectomy has not been made more difficult, and the patient has not been shocked greatly by a previous major operation. The most acceptable procedure seems to be heminephrectomy, since only the offending portion of the kidney is removed.

I wish to express my appreciation to Dr. John R. Ashe, whose advice and aid were invaluable in the care of this patient.

AN ACCESSORY ABDOMINAL TESTICLE

OSCAR W. CRANZ, M.D., F.A.C.S.
KINSTON

The majority of the reported cases of polyorchidism should be accepted with the greatest reserve. Most of the essayists on this subject have presented clinical data alone, and have failed to confirm their statements by histological and pathological proof.

Jeannin and Delater[1] refer to a case described by Lassen as the first authentic report of this condition. He found two small tumors, bound together by a cord, arising from the normal testicle in a hydrocele. There was no determinable connection with the vas deferens. On section the tumors were found to be made up of testicular tissue, but there was no evidence of active spermatogenesis.

The same authors also refer to a case reported by Mariotte, in which the patient was operated on for a left inguinal hernia, and in which there was found, beside the normal testicle, a body as large as a bean, furnished with a little vas deferens. Microscopic examination showed the two organs to be identical in tissue structure, but the supernumerary organ was found to be inactive.

Haas[2], in operating on a boy for inguinal hernia and cryptorchidism, found a supernumerary testicle on the left side with a vas deferens. Microscopic examination showed atrophic glandular tissue.

Day[3] reported the case of a man supposed to have had five testes. On examination the subject was found to have two normal scrotums and a third rudimentary one. Two apparently normal testicles occupied each scrotal sac, and an atrophic one was thought to be present in the scrotal sac posteriorly.

Hall G. Holder[4] in 1924 reported the case of a man who presented an area of marked inflammation surrounding the location of the femoral and inguinal lymph nodes. The inflammatory process extended upward 6 cm. above Poupart's ligament and downward on the medial side of the left thigh. An incision was made in this area, and creamy pus was encountered. This was done on the surgical service.

Eighteen days after admission, the patient, who had become progressively worse, was transferred to the urological service. Examination revealed two large discharging sinuses in an area of gangrene extending all over the inflamed region and also on the shaft of the penis and the scrotum. An incision was made connecting the two sinuses and a mass supposed to be the inguinal lymph node was removed. The mass, however, presented testicular tissue, a vas deferens, and an epididymis. Two apparently normal testicles and a normal scrotum were also found. The lining epithelium showed that active spermatogenesis was taking place.

Case Report

D. M., a white male aged 30, married and the father of four children, was admitted on the surgical service of Memorial General Hospital of Kinston, on February 10, 1940, with a chief complaint of pain starting in his epigastrium ten hours before admission. He had been seen by his family physician, who administered one fourth grain of morphine. The pain was relieved, but in four hours returned again, more severe in character, now extending over the entire abdomen, and accompanied by nausea and vomiting. The bowels had moved once and were of normal consistency. The past history was entirely negative and the patient stated that he had always been in normal health except for a few diseases of childhood. He had had no previous operations.

Physical examination on admission showed a well developed, well nourished white male. The head, neck, and lungs were normal. The heart was normal in size and position, with

Read before the Seaboard Medical Society, Virginia Beach, Virginia, December 3, 1941.

1. Jeannin et Delater: Testicules Surnumeraires. A propos d'une observation de troisieme testicule histologiquement en activite, Bulletins et Memoires de la Societe Anatomique, 98:677 (November) 1923.
2. Haas, A.: Supernumerary testicles. Deutsche Ztschr. f. Chir. 168:1 (January) 1922.
3. Day, G. H.: One Man With Five Testes. J. A. M. A., 71:2055 (December 21) 1918.
4. Holder, Hall G.: A Probable Case of Triorchidism, J. Urology 13:555 (May) 1925.

a regular rate and rhythm. The blood pressure was 130 systolic, 80 diastolic. The temperature was 100 F., the pulse 90, and respirations 22. Tenderness was present over the entire lower abdomen, but was more marked in the right lower quadrant. Cutaneous hyperesthesia was elicited on the right. There was moderate rigidity of the right rectus muscle and rebound tenderness. There were no palpable masses, nor was any distention present. Rectal digital examination was negative. Two normal testes were normally implanted in the scrotum. The prostate was firm and of normal size and consistency. A prostatic smear obtained later showed a normal sperm count with normal activity of the sperm.

The leukocyte count was 14,400, with 88 per cent polymorphonuclears, 4 per cent eosinophils, and 18 per cent lymphocytes. Urine examination was negative, and the Wassermann test was negative.

A tentative diagnosis of acute appendicitis was made, and under spinal anesthesia (100 mg. of novocain) the abdomen was opened by incision. When the peritoneal cavity was entered, a thin grayish fluid was encountered. No odor could be detected. The appendix was found to be free and covered with a serosanguineous exudate. It was markedly distended and acutely inflamed, and was removed in a routine manner. Just as closure of the peritoneum was begun, there was noticed a cyst-like mass, suspended by a cord or pedicle from the inner side of the peritoneum. This was examined thoroughly. The pedicle could not be traced any farther than the peritoneum, and apparently did not run down to the internal ring. The pedicle was ligated at its base and removed along with the mass. The wound was closed in layers without drainage, and the pathological specimen was sent to the laboratory for examination.

Dr. Robert P. Morehead made the following pathological report on the specimen:

Gross Description: The specimen consists of a bilobate piece of tissue which measures 3½ by 2 by 1 cm. This piece of tissue is roughly heart shaped, and its outer surface is glistening. On section, a thin-walled cyst is seen which possesses a smooth lining, and which measures 1½ cm. in diameter. The other portion of the tissue is occupied by a mass of grayish brown tissue, which is encapsulated, and measures 1½ cm. in diameter. This tissue resembles testicular tissue.

Microscopic Description: Sections show a dense fibrous tissue capsule which resembles the tunica albuginea. Beneath this fibrous tissue capsule are many structures which resemble amyloid. The interstitial tissues resemble those of the testicle. At the other end of the section are structures which are identical with the glands of the epididymis, and the columnar cells show many cilia. One large cyst is present which is lined by a layer of cuboidal cells. There is no spermatogenesis.

Diagnosis: Intra-abdominal testicle.

The patient had an uneventful postoperative convalescence and was discharged in one week's time.

Conclusions

1. Polyorchidism is a rare condition.
2. Many cases reported in the literature are not proven cases.
3. The case presented is, to our knowledge, the seventh case proven by pathological study reported to date.
4. The case reported in this paper is the only proven case in which the accessory testicle was found in the abdomen on the right side.

The Importance of Pelvic Examination in Abdominal Lesions.—A distinguished author suggests that "if the history and abdominal findings are inconclusive, a careful yet gentle pelvic examination assumes great importance." In reviewing our mistakes, the most vivid impression gained was that **more errors were committed by omitting the pelvic examination than by omitting all other diagnostic procedures combined.** May we, therefore, urge pelvic examination through the vagina or through the rectum not only when the history and abdominal findings appear to be inconclusive, but in all cases?

An intact hymen rules out salpingitis almost certainly, but a palpable Bartholin's gland, purulent Skenitis or urethral discharge is strong circumstantial evidence, and cervicitis in a nullipara is more than gossip.

Tenderness of the adnexa is best demonstrated by a maneuver not described in text books. The examining finger pushes the cervix to the right. The uterus acts as a lever and puts the right adnexa on stretch. Tenderness elicited by this simple maneuver earmarks the diagnosis.

Induration of acute salpingitis may be demonstrable only when the patient is relaxed. With the patient and the operating room prepared for appendectomy, if the relaxation of the anesthesia permits a correct diagnosis, it is sound judgment to postpone operation until the tube "cools off".

Pelvic examination is important in suspected ectopic. The uterus is enlarged, the cervix is soft, and there is slight bleeding. The pregnant tube "rides high" and forward, whereas pus tubes are heavy and fall back into the depths of the cul de sac.—William J. Carrington: Differential Diagnosis of Acute Lower Abdominal Lesions in the Female, J. M. Soc. New Jersey 38:504 (Sept.) 1941.

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MARCH, 1942

THE EIGHTY-NINTH ANNUAL SESSION

It has been twenty-two years since the State Medical Society last met in Charlotte. The attendance then broke all previous records. We have stayed away too long from the Queen City, and when the members of the Society meet for the eighty-ninth annual session, they may be sure of a royal welcome. President Webb Griffith and Secretary Roscoe McMillan are leaving nothing undone to insure the success of the meeting, and the local committee on arrangements is cooperating nobly. The various section chairmen are already hard at work preparing for their respective groups, and some of them expect to present some interesting innovations. The hotels of Charlotte are well prepared to take care of a large delegation, and the Hotel Charlotte, the official headquarters, will offer adequate facilities for the various meetings. It will be worth the trip to inspect Charlotte's magnificent new hospital.

The Auxiliary will hold its annual meeting at the same time—so don't forget to bring your wife along.

Please remember that the first meeting of the House of Delegates will be held at 2 p. m. on Monday, May 11. There is so much business to be transacted by this body that this afternoon meeting is necessary.

Don't forget the time—May 11, 12, and 13; and the place — Charlotte, with headquarters at the Hotel Charlotte.

* * * *

IMMUNITY IN VIRUS INFECTIONS

One of the most puzzling problems in immunology has concerned the virus diseases. Since one attack of most of the recognized virus diseases usually confers lasting immunity, why is the immunity from the common cold and influenza—now generally conceded to be of virus origin—so short lived? We all know that a single attack of smallpox, chicken pox, measles, or yellow fever will confer life-long immunity; but most of us know from personal experience that it is possible to have several colds in one year, and at least two attacks of influenza.

In a recent article[1], Rivers discusses the question of virus immunity, and offers a plausible explanation for this apparent discrepancy. His theory is that lasting immunity results from the virus's remaining within the tissues of the host. This would not mean that such an individual is capable of spreading the disease, for the virus is probably "stored in some remote part of the body within living cells where it can not come in contact with circulating antibodies and from which point it can not . . . reach the outside world." In the case of the respiratory diseases, Rivers postulates that the virus does not long remain within the body, perhaps because of the type of tissue involved. "For example, it is possible that in the case of the common cold and influenza the viruses attack superficial tissues, establish themselves in such tissues and would lead to an enduring immunity if these tissues themselves were not temporary . . . the superficial cells lining the respiratory tract are being thrown off at regular intervals to be replaced by new cells from deeper layers and do not provide a permanent abode for viruses."

Whether this theory is finally proved or not, it offers an intriguing explanation of a baffling phenomenon.

1. Rivers, Thomas M.: Immunity in Virus Infections, Science 95:108 (January 30) 1942.

THE SULFONAMIDES

In the *New York State Journal of Medicine* for February 1 the monthly Conference on Therapy by members of the Departments of Pharmacology and Medicine of Cornell University Medical School is devoted to the sulfonamides. The whole discussion is of great interest, and repays careful reading. The following points are of paramount interest:

1. Sulfadiazine at present bids fair to be used more than all the other sulfonamide derivatives combined, because of its low toxicity, its freedom from unpleasant nausea and other side effects, and its wider range of effectiveness.

2. The sodium salts of the sulfonamides are highly soluble in water, and may be given parenterally. During the past year sodium sulfadiazine in 25 per cent solution has been administered routinely at Bellevue without untoward effects. The solution is given slowly through a small gauge needle. It is also thought that even by mouth the sodium salt of sulfadiazine is more quickly absorbed, more effective, and no more toxic than is the drug itself.

3. A higher concentration in the spinal fluid is obtained with sulfadiazine than with any other sulfonamide—the level being from two thirds to 80 per cent of the blood level. Sulfathiazole gives the lowest concentration in the spinal fluid—about one third the blood level; sulfanilamide and sulfapyridine, about two thirds.

4. The initial dose of sulfadiazine recommended in pneumonia is 4 Gm. by mouth or 2.5 Gm. intravenously, followed by 1 Gm. by mouth every four hours until at least twenty-four hours after the temperature has subsided.

5. This group have not found the sulfonamides effective in subacute bacterial endocarditis.

6. In seriously infected abdominal lesions the use of sulfadiazine has proved a life saver. The intravenous route is used just before and after operation, until the patient is able to take the drug orally. The drug is given for about a week altogether. The blood concentration is kept at around 3.5 to 4 mg. per 100 cc.

7. While the prophylactic use of the sulfonamides is being extended, the point was made that the group does not recommend their use "for minor conditions like sinusitis and the common infections of the upper respiratory tract."

REFERENCES

In the preparation of manuscripts for publication in the NORTH CAROLINA MEDICAL JOURNAL, no one thing has given as much trouble as has the matter of references. Although this subject has been discussed in a previous editorial[1], it seems necessary to state again the preferences of this Journal in the arrangement and form of bibliographic references.

The NORTH CAROLINA MEDICAL JOURNAL follows as nearly as possible the arrangement of references recommended by Dr. Morris Fishbein in his book, MEDICAL WRITING, and employed in the *Journal of the American Medical Association*. Dr. Fishbein states: "References to the literature and comments on various matters mentioned in an article that are to be used as footnotes should be numbered consecutively through the article, with corresponding . . . reference figures in the text . . . Although in the printed article footnotes appear at the bottom of the page on which they are mentioned, in the preparation of the manuscript they should be typed, in double space, on a separate page following the text matter."

Although some publications follow the custom of grouping references at the end of a paper in the form of a bibliography, Dr. Fishbein says that this should be done "only when an exhaustive review of the literature has been made on a subject of sufficient importance to warrant such a survey."

References will be much more valuable to the reader if they are given in the proper form and contain the full information necessary to locate them. A complete reference to a book should give, in the following order, the author's surname and initials, the title of the book, edition, place of publication, name of publisher, year of publication, volume (if more than one have been published) and page. References to magazine articles should contain the author's surname and initials, title of the article, name of the periodical, volume, page, and date of publication The number of a periodical should not be included when the volume number is given.

1. The Preparation of Manuscripts, North Carolina M. J. 1:161 (March) 1940.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

WILEY D. FORBUS, M. D.,
O. C. HANSEN-PRUSS, M. D., and
HALLA BROWN, M. D.

Presentation of Case

The patient, a 42 year old colored farmer, entered the hospital complaining of chills and fever. The family history was not contributory, and the patient's previous general health had been excellent. He had had gonorrhea twenty-four years ago, and twenty-one years ago had passed dark colored urine over a period of four days. This was attributed to "straining and lifting a heavy object"; there was no history suggesting renal colic.

The patient's present illness began three weeks before admission, with diarrhea, nausea, vomiting, and loss of appetite, which he attributed to strawberries he had eaten the day before. Because of the weakness and general malaise he remained in bed during the next week. He consulted his family physician on June 9 because of persistence of the diarrhea and malaise. He had not noticed any clay colored or tarry stools. The physician found his temperature to be 102.3 F. All food was omitted for twenty-four hours, and he was given 15 grains of sulfathiazole four times a day for three days; fluids were forced. He improved and went back to work, but one week later the malaise returned, and he was found to have a temperature of 102 F. The stool and blood cultures were reported negative for typhoid organisms by the State Laboratory. Examination at this time showed the tongue to be coated, the gums receding, the belly soft and not tender; the liver was not enlarged or tender. The urine contained no pus, albumin, or sugar. A malarial smear was negative for parasites. Three days later (June 19) the patient complained of a severe pain under the right costal margin, which "nearly shut my breath off." His temperature was 103.3 F., pulse 120, respirations 24. His physician reported a definite "splinting" of the right lower chest anteriorly and posteriorly. The percussion note was dull in this region and the breath sounds were distant. There was some increased resistance in the right upper quadrant, with tenderness over the liver margin. On bimanual palpation a mass was felt in the right flank. The spleen was questionably enlarged.

Admission to Surgical Service: The patient was admitted to the surgical service on June 24, 1941. The temperature was 35 C., the pulse 90, respirations 22, blood pressure 110 systolic, 70 diastolic. He was well developed and well nourished and in no apparent distress, but he appeared moderately ill. The skin was hot and moist. Scattered over the entire body, but particularly over the sternum, there were multiple small subcutaneous "semi-cystic" masses which seemed to be attached to the skin. The inguinal and axillary lymph nodes were slightly enlarged, but not tender. The pupillary reactions and eye grounds were entirely normal. The trachea was in the midline; the thyroid was not enlarged. The lungs were clear to percussion and auscultation. The diaphragms were symmetrical, and the heart was normal in all respects. The abdomen was described as flat. The liver was palpable 7 cm. below the costal margin and extended well past the midline, and there was tenderness on quick pressure over the liver. The spleen and kidneys were not palpable. There was no evidence of any free fluid in the abdomen.

His hemoglobin was 64 per cent, and there were 4,500,000 red blood cells and 40,000 white blood cells, with a marked preponderance of segmented polymorphonuclears and only occasional stab and juvenile forms. A smear for malarial parasites was negative.

Two days later the patient was seen by the medical consultant, Dr. Horack, whose physical examination confirmed the findings of the admitting surgeon, except that Dr. Horack found the spleen to be palpable and slightly tender. Typhoid fever and amebiasis with amebic abscess of the liver were suggested as possible diagnoses.

A proctoscopic examination by Dr. Ruffin disclosed a diffusely injected rectal mucosa with a moderate amount of pus. He felt that the appearance of the mucosa was suggestive of an acute colitis due to the typhoid dysentery group rather than amebic colitis. Agglutinations for the typhoid-paratyphoid group were negative.

The patient remained on the surgical service for a week, and during this time had a

spiking fever with a moderate tachycardia. He was transferred to the medical service on June 30.

Admission to Medical Service: The general physical examination gave the same findings previously noted. The hemoglobin was 9 Gm., or 58 per cent; the red blood cells 3,000,000, with a color index of .97, and a mean corpuscular volume of 109 cubic micra. There were 15,920 white blood cells, with 75 per cent polymorphonuclear segmented cells, 3 per cent stabs, 2 per cent juveniles, 3 per cent large lymphocytes, 10 per cent small lymphocytes, 3 per cent eosinophils, 1 per cent basophils, and 1 per cent monocytes. No malarial parasites were seen. The blood Wassermann and Kahn reactions were negative.

Many specimens of urine were examined. The specific gravity ranged from 1.010 to 1.020; the reaction for sugar and albumin was always negative. The microscopic examination of the urinary sediment showed nothing abnormal except an occasional granular cast toward the end of his illness. The benzidine reaction was persistently negative.

Agglutination tests for typhoid, paratyphoid A, paratyphoid B, and Proteus X_2 were negative. Cultures of the urine and stool showed no typhoid-dysentery organisms. Numerous blood cultures were made, and all were sterile.

The blood nonprotein nitrogen ranged around 32 mg. per 100 cc. The serum van den Bergh reaction was at first indirect (bilirubin 0.3 mg. per 100 cc.), and on July 22 became direct (bilirubin 16 mg. per 100 cc.). The bromsulfalein test on July 1 showed a retention of 8 per cent.

X-Ray Studies: A fluoroscopic examination of the lungs on June 25, the day after admission, showed the lungs, diaphragm and mediastinum to be normal. The diaphragms moved freely. An x-ray of the chest was negative. A flat plate of the abdomen taken on the same day showed an area of decreased density in the liver opposite the anterior portion of the fifth rib. The liver was enlarged. An amebic abscess was felt to be a possibility.

On July 6 the patient was given thorotrast and a series of x-rays of the liver region were made, but these were unsatisfactory because of insufficient concentration of the thorotrast. On July 14 fluoroscopic and x-ray examination of the chest was again performed. At this time the right diaphragm was described as being high and fixed. An area of thickening was seen in the lung, extending from the medial portion of the right diaphragm upward and laterally to the interlobar fissure. A film of the mid-abdominal region showed a large liver and a questionable area of rarefaction in the liver. Bilateral retrograde pyelograms showed the urinary tract to be normal. Eight days later x-rays were taken of the gastro-intestinal tract. Six hours after the barium meal there was about 25 per cent residue in the stomach and the stomach was found to be displaced to the left by what appeared to be an enlarged and hard liver. The duodenal bulb filled well, with no evidence of any lesion. In the distal portion of the bulb there was a persistent spasm and delay in emptying which was so marked that it was thought to be responsible for the six hour retention. At twenty-four hours the barium was found to be in the splenic flexure and sigmoid colon. The transverse colon was quite spastic and possibly pushed down by the enlarged liver.

Course in the Hospital: The patient lived for about five weeks after the transfer to the medical service. During this time he had a spiking fever with a moderate tachycardia and rather frequent shaking chills. He was given large amounts of vitamins and was also given six large blood transfusions of 500 cc. each in the course of about three weeks, and large amounts of glucose. On July 9 he was started on sulfathiazole, and was given 6 Gm. a day until July 15. He was then given a course of emetine, 64 mg. a day, for seven days. Neither of these remedies had any effect on his temperature curve or general condition. On July 22 a thoracentesis yielded 675 cc. of reddish-brown fluid; the specific gravity was 1.018, the cell count 7. Gram stains and acid fast stains failed to show any organisms. Pigs inoculated with the fluid died a month later without showing any evidence of tuberculosis or any other disease. The fluid was cultured aerobically and anaerobically and no organisms were grown.

Blood chemical studies done on July 29 gave the following findings: blood nonprotein nitrogen, 29 mg. per 100 cc.; total plasma proteins, 6.1 Gm. per 100 cc., albumin 1 Gm. per 100 cc., globulin 5.1 Gm. per 100 cc., albumin-globulin ratio 0.2; blood sulfathiazole 4.1 mg. per 100 cc.

The patient developed a gradually increas-

ing abdominal distention and finally a frank ascites. The white cell count ranged between 10,000 and 15,000; the hemoglobin and red cell count ranged around 55 per cent and 3,200,000 respectively. The patient grew rapidly weaker, and became comatose on August 4. He died that afternoon despite the administration of various stimulants.

Discussion

DR. O. C. HANSEN-PRUSS: The clinical problem, initially, was the explanation of a high, persistent, irregular fever. The usual bacteriological and immunological studies were negative. Metastatic embolic phenomena were not observed—at least, not in the sites where they most commonly occur (skin, kidneys). There were no clinical evidences of an endocarditis. The leukocytic formula showed a relatively insignificant shift to the left in the hemogram, despite a febrile illness of several weeks' duration. In view of these facts, a pyogenic infection, certainly a bacteremia, seemed unlikely until the latter part of July. There was no concrete evidence of a pyogenic infection which could explain this man's febrile response.

Every clinician has been confronted with the problem of an "unexplained" fever[1]. It has been correctly stated that fever may be the first manifestation of a malignant neoplasm. This seems to be particularly true in cancer of the kidneys and of the adrenals[2]. Fever is also a frequent accompaniment of metastatic carcinoma of the liver. In this patient there were no demonstrable signs of cancer, such as enlarged peripheral lymph nodes, roentgenological evidences of bone involvement, or bleeding. Cancer may be discovered post mortem in this case but there are no clinical data other than the unexplained fever and the palpable liver to warrant such a diagnosis.

Because of the story of dysentery and the enlarged liver, amebiasis was considered. The appearance of the colonic mucosa was not that usually seen in amebic colitis, and, what is more important, amebas could never be demonstrated in the stool or in the material obtained by proctoscopy[3].

In July, approximately eight weeks after the onset of the illness, there appeared the physical signs of fluid in the right pleural cavity. In addition, x-ray films of the chest revealed some process in the parenchyma of the right mid-lung. Thoracentesis yielded about two pints of a "reddish-brown" fluid, with a low cell count. Cultures of this fluid remained sterile and inoculated guinea pigs failed to develop tubercular lesions. The following questions arise: (1) Was the process in the right pleural cavity and mid-lung the result of an extension from a primary subdiaphragmatic disease? (2) Are they delayed manifestations of primary pulmonary or bronchial disease? (3) Is the thoracic disease independent of a previous fever-producing lesion? (4) If the thoracic and subdiaphragmatic processes are related, is the underlying process of an inflammatory or a neoplastic nature?

The clinical data suggest strongly that the inception of the disease was in the bowel. Very early in the disease the liver became involved; the persistently low plasma albumin[4] and the final development of ascites point to an extensive derangement of liver function. Because of this it seems logical to assume that the intrathoracic disease represents an extension of the intra-abdominal disease. A pyogenic infection could not be proven; furthermore, the disease progressed under intensive chemotherapy. The same objections can be offered to a possible amebiasis. It is, of course, impossible to state definitely that this man's illness was not of neoplastic origin. Yet it seems unlikely that he died of cancer when repeated studies and clinical observation over a period of almost eleven weeks failed to prove its existence.

This leaves us with the final diagnostic possibility: a fungus infection. It is suggested that this man developed a fungus infection of the bowel, probably actinomycosis. The clinical course, the apparent mode of extension and metastatic spread suggest that the fungus, if it is a fungus, was Actinomyces. It has been stated[5] that the primary lesion in most cases is in the lung. In our case, the sequence of events points to a primary focus in the intestines, with subsequent extension to the right pleura and lung.

1. Hamman, L., and Wainwright, C. W.: The Diagnosis of Obscure Fever, Bull. Johns Hopkins Hosp. 58:307 (April) 1936.
2. Hansen-Pruss, O. C., and Harrell, G.: Fever in Malignant Neoplasms, Internat. Clin. 1:250 (March) 1938.
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5. Auster, L. S.: Actinomycosis, A Review of the Subject with Detailed Clinical and Autopsy Reports of One Case Each of the Intestinal and Ovarian Forms, Am. J. Clin. Path. 10:652 (September) 1940.

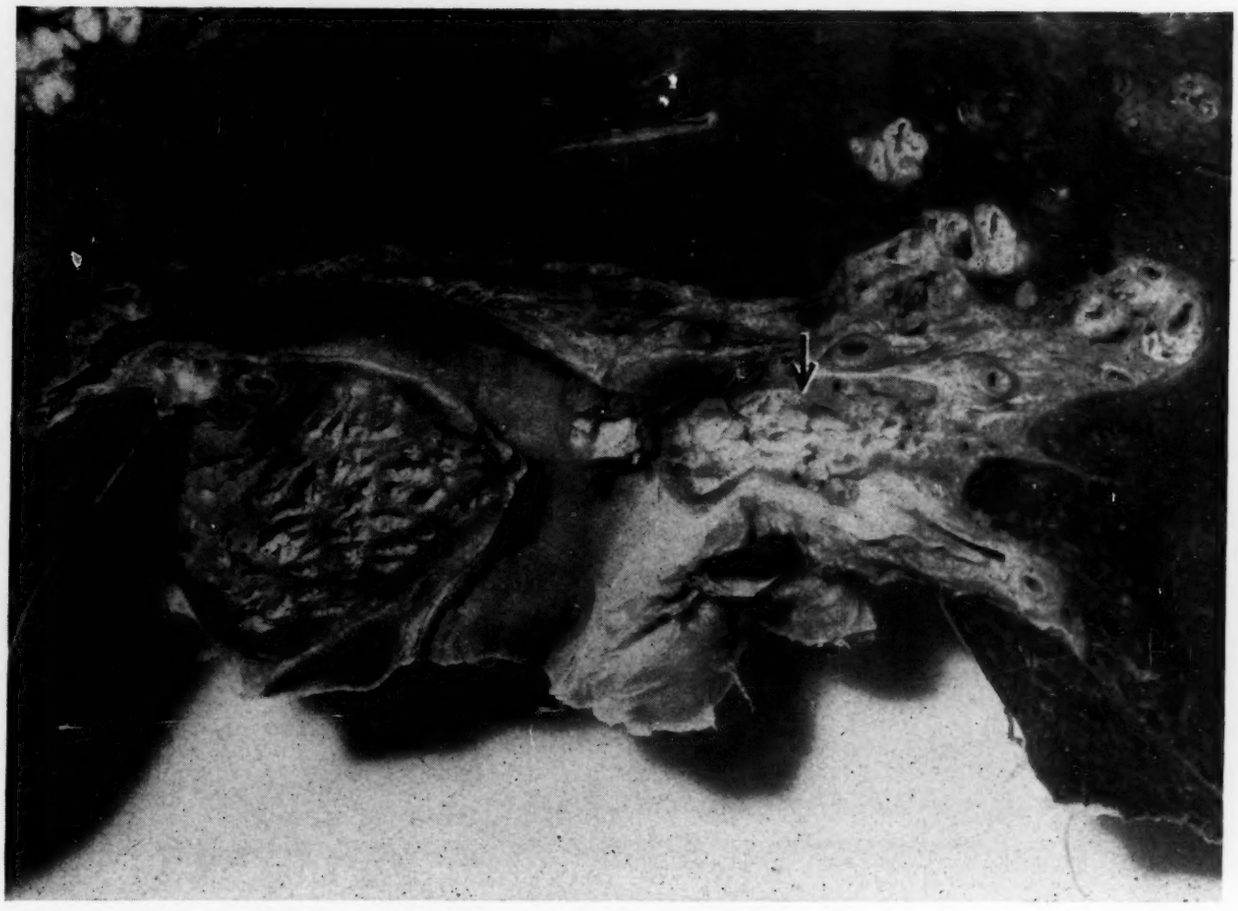

Fig. 1. Hilus of liver, showing pylephlebitis (arrow).

Experience has demonstrated that in the abdominal form of actinomycosis, the primary focus is most frequently in the appendix or in the sigmoid[6].

Dr. Hansen-Pruss's Diagnosis

1. Actinomycosis, primary in the intestine, spreading to the liver, right pleura and right lung.
2. Death from toxemia due essentially to a secondary pyogenic infection.

Anatomical Diagnosis

Actinomycosis of the appendix; actinomycotic pylephlebitis; multiple actinomycotic abscesses of the liver; rupture of the hepatic abscess into the subphrenic space; extension of the subphrenic abscess through the diaphragm; fibrinous peritonitis and pleurisy; multiple actinomycotic emboli to the lungs; pulmonary arteritis and periarteritis; lobular pneumonia, bilateral; gastric polyp; submucosal hemorrhages in the gastro-intestinal tract and bladder; multiple sebaceous cysts; minimal atherosclerosis.

Anatomical Discussion

DR. WILEY D. FORBUS and DR. HALLA BROWN: The most conspicuous morphological changes are found in the appendix, the portal vein, the liver and the lungs. The entire gut is dilated and covered with fine fibrinous adhesions, but the appendix alone shows evidence of actinomycosis. It is bound down and angulated by old adhesions. The wall is thickened, and cut section shows a large dark yellow plaque in the thickened area. Microscopically, the appendiceal mucosa is ulcerated. The blood vessels in the wall of the appendix show inflammatory, and in places, necrotic changes. The Actinomycetes appear as pink staining filamentous masses in the ulcerated submucosa. They are surrounded and partially engulfed by multinucleated giant cells. The entire appendiceal wall in these areas is infiltrated by plasma cells, macrophages, and polymorphonuclear leukocytes.

The actinomycotic process cannot be fol-

6. Lord, F. T.: Contribution to Etiology of Actinomycosis; Experimental Production of Actinomycosis in Guinea Pigs Inoculated with Contents of Carious Teeth, Boston M. and S. J. 162:82, 1919.

Fig. 2. Liver, showing multiple actinomycotic abscesses.

lowed between the vessels of the meso-appendix and the portal vein, but in the latter its presence is demonstrated beyond doubt. The portal vein is filled with thick creamy pus (fig. 1), and at the hilus one can see microscopically a typical sulfur granule within the lumen of a branch of the portal vein. The mycelia form a dense mass with the clubs irregularly arranged at the periphery.

The liver presents a striking picture. It is enlarged (3,160 Gm.) and studded by innumerable irregular racemose abscesses which replace most of the parenchyma (fig. 2). From the abscesses flows thick greenish pus in which sulfur granules can be seen on direct smear. Microscopically, the pattern is unvarying. Sulfur granules encircled by giant cells lie at the center of almost every abscess. Surrounding them is a zone of necrosis. Outside this and also scattered in the necrotic areas lie polymorphonuclear leukocytes. Fibroblasts lying in homogeneous scar tissue in most places form the wall of the abscess, but in other places liver cells immediately surround the necrotic area. The gallbladder is backed by a similar large abscess that penetrates its wall.

Several of these racemose abscesses have run together in the right lobe of the liver to form a large round abscess immediately beneath the hepatic capsule (the area of density seen by x-ray). The diaphragm overlying it is congested, covered with exudate, and in places necrotic. The adjacent pleura is three times its normal thickness, the cells spread apart by exudate in which lie vacuole-containing macrophages. The adjacent lung tissue shows evidence of lobular pneumonia. Microscopic sections far removed from the diaphragm, in the left upper lobe, present an unusual appearance. In an area devoid of pneumonia, the blood vessels are thick-walled, some of them occluded. In one, sulfur granules form the core of a thrombus composed of necrotic material surrounded by fibroblasts. There are no Actinomycetes within the bronchioles.

The other organs are not involved in the actinomycotic process. A benign gastric polyp is present in the fundus, but it in no way obstructs the pylorus. The kidneys show minimal chronic inflammatory changes

which cannot be definitely related to actinomycosis.

The pathogenesis of the infection in this case is clearly demonstrated. The organism entered through the gastro-intestinal tract and lodged in the appendix, where the oldest lesions are found. From here it was carried by the ileocolic and superior mesenteric veins to the portal vein and so into the liver, which became studded with actinomycotic abscesses. From the liver the organisms were disseminated in two ways: first, by direct extension from the subdiaphragmatic abscess into the hepatic peritoneum, the diaphragm, and directly through the pleura into the right lung. The second mode of dissemination was by way of the hepatic veins, the inferior vena cava, the heart, and then the pulmonary arteries. This is evident from the fact that actinomycotic thrombi were found in the upper lobe of the left lung, which was not adherent to the diaphragm nor in any way involved by direct extension of the hepatic abscesses.

The relationship of the colonies of Actinomycetes to the inflammatory reaction in the liver is extraordinarily interesting. One sees all of the known forms of the organism in these colonies. Surrounding all of the colonies is a zone of polymorphonuclear leukocytes. These are in intimate contact with the masses of organisms. About some of the granules giant cells in all stages of formation can be seen. One feature of the giant cells that is extraordinary is the absence of nuclei in that portion of the giant cell cytoplasm lying adjacent to the actinomycete colony. This is further peculiar in the fact that the cytoplasmic mass of the giant cell fuses with the mass of organisms. In some places one giant cell extends its cytoplasm in a pseudopodial manner and almost envelops the actinomycete colony. These giant cells appear to act in every way like amebas or huge leukocytes in their approach to and encirclement of the actinomycete mass, which they eventually surround and take into their own body. The reaction to this organism is predominantly polymorphonuclear, although in the old abscesses mononuclear macrophages are abundant about the periphery. Giant cell formation is incidental and occurs only when there is an actual foreign body such as a dead colony to be disposed of. The reaction is much like that which occurs in blastomycosis.

To correlate the different stages of the infection with the clinical signs and symptoms is far more difficult than to describe the pathological anatomy. The primary infection was evidently asymptomatic or so nearly so that we have no record of illness at that time. For some reason unknown to us the organism happened to invade a blood vessel. This probably was the cause of the acute episode three weeks before admission when the patient thought that he was suffering from an attack of food poisoning. With each of the febrile episodes Actinomycetes may be considered to have been liberated through the blood stream into the liver. The right upper quadrant overlying the liver became tender; when numerous abscesses had developed the liver became enlarged. Considering the degree of liver damage it is remarkable that the bromsulfonphthalein test showed only 8 per cent retention of dye. The ascites can be explained, as Dr. Hansen-Pruss suggested, first, by a lowering of the plasma proteins secondary to liver damage severe and diffuse enough to prevent their synthesis; second, by impairment of the circulation through the liver due to the multiple abscesses; and third, perhaps by a serous reaction to the numerous abscesses that bulged beneath the hepatic capsule. The shadows seen in the lungs on x-ray are due to bronchopneumonia secondary to actinomycotic pulmonary emboli. The pleural reaction to this process caused the hydrothorax.

This case exemplifies only one form of actinomycosis, the abdominal, the commonest form of the disease. Intestinal infection is thought to arise from swallowing Actinomycetes, which are normally found in the mouth and the tonsils. Why and how the organism penetrates the gastro-intestinal tract in some cases and not in others is not definitely known. The site of predilection is the ileocecal region, three quarters of the reported cases having occurred in this location. The signs are frequently those of an acute appendicitis. If the disease is of long duration the first sign may be a mass in the right lower quadrant due to extension of the chronic granulomatous process into the peritoneum. The disease is frequently of long duration, death or recovery occurring after months or years.

This case demonstrates the importance of remembering that the signs and symptoms of common disease processes, such as bronchitis, appendicitis, diarrhea, or superficial

infections, may be produced by many causes. To evaluate any case properly, one should run over in one's mind the rare as well as the usual causes of such a clinical picture. Only by this method will every eventuality be considered. In a diagnostic problem merely thinking of a workable etiology and pathogenesis wins half the battle.

Comment by Dr. Hansen-Pruss

This case teaches us again that all transudates and exudates, at least from patients who present a puzzling diagnostic problem, should not only be cultured routinely but also for fungi. Furthermore, fresh preparations of such material should be examined carefully. I am sure that the Actinomyces could have been demonstrated in the pleural fluid, if the proper studies had been carried out.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Negligence: A physician who is negligent in his treatment of a person injured through the wrongful act of a motorist is not primarily liable.

This is a case in which one man sued another to recover damages for personal injuries sustained when the automobiles in which they were riding collided. This action was based upon the alleged negligence of the defendant. The defendant in answering denied negligence on his part and set up a cross action against the plaintiff for personal injuries sustained and expenses incurred, which he alleges were proximately caused by the negligence of the plaintiff. The plaintiff filed a reply to the cross action, denying negligence and alleging that after said defendant sustained personal injuries resulting from the wreck of the two automobiles he employed and was treated by a physician who was guilty of malpractice in that he did not exercise ordinary care and apply the requisite degree of skill and knowledge in treating the defendant; and that the injuries sustained by the defendant were materially aggravated by the physician's negligence. The plaintiff therefore alleged that the physician was primarily liable, and on motion of the plaintiff's counsel the court entered an order making the physician a party defendant. A summons, a copy of all the pleadings, and the order making him a party defendant were served upon the physician. In due time the physician appeared and filed a demurrer to the plaintiff's reply, claiming that there was no sufficient cause of action alleged against him; that he was neither a necessary nor a proper party to said action; that there was a misjoinder of both parties and causes of action; and that several causes of action were improperly united. The court sustained the demurrer and entered judgment dismissing the action against the defendant physician. The plaintiff excepted and appealed.

The reason for including the doctor as codefendant was, of course, to force him to share in the damages which might be assessed against the plaintiff. When the case came before the Supreme Court for decision the Justice writing the opinion stated that in order for two persons to be joint tort-feasors, either they must act together in committing the wrong, or their acts, if independent of each other, must unite in causing a single injury. Therefore the party whose negligent conduct caused an injury and the physician who negligently treated the injury thus inflicted, thereby aggravating the damages resulting from the original injury, are not joint tort-feasors. The court felt that there was no concert between the original plaintiff in the case and the physician, nor did their acts of negligence concur in producing a single injury. The cause of action, if any, against the plaintiff arose out of his alleged negligence in operating an automobile, while that against the physician was grounded upon the breach of duty the law placed upon him by reason of the relationship created by contract of employment. The causes were only incidentally related in the sense that the physician happened to be treating an injury inflicted by the plaintiff. The physician's guilt, if any, was that of omission; since if he did not treat the injuries properly and skillfully he failed to minimize but did not in any sense cause the injury. There was no reason why the plaintiff should receive a contribution from the physician because of any relationship of primary liability, because none existed. The physician, however, upon the introduction of proper evidence might be liable in damages to the patient whom he treated for any untoward results which might have occurred due to his improper and unskillful management of the case. This, of course, would have to be brought up in an entirely different and separate action.

Although the Supreme Court confirmed the findings of the Superior Court and dismissed the action against the physician, he was nevertheless subjected to a long siege of expensive and troublesome litigation. (North Carolina Supreme Court, Vol. 219, p. 607. Decision rendered spring term, 1941.)

Modern Methods of Immunization. — Physicians who are concerned with the immunization of infants and children have as their goal the use of materials which will not sensitize the patient and the utilization of routes of administration that cause least discomfort. Definite assistance toward these objectives is provided by use of combined antigens in the opinion of a recent observer (J. Florida M. A. 28:330, 1942). The author has employed Combined Diphtheria Toxoid-Tetanus Toxoid, Alum Precipitated (Lilly) for the last three years without any untoward reactions.

The combination of diphtheria and tetanus toxoids is effected by mixing suitable amounts of the respective toxins which have been detoxified by the use of formaldehyde, and precipitating from this combination with alum the diphtheria and tetanus toxoids. The individual toxoids are tested for toxicity prior to mixing, and the combined alum precipitated toxoid is tested for toxicity after precipitation. Potency is determined by injecting guinea pigs with a human dose. After four weeks the blood serums of these animals must show at least 2 units of diphtheria antitoxin and 2 units of tetanus antitoxin per cubic centimeter of blood serum.

Should exposure to either diphtheria or tetanus occur before immunization against each disease is completed, the usual procedures for immediate protection of unimmunized subjects should be considered. The combined toxoid is not for treatment; it is a prophylactic measure of active immunization against diphtheria and tetanus.

MILITARY MEDICINE

LETTER FROM THE COMMITTEE ON MEDICAL PREPAREDNESS

February 27, 1942.

Dr. Wingate Johnson, Editor
NORTH CAROLINA MEDICAL JOURNAL
Winston-Salem, N. C.

Dear Dr. Johnson:

At the invitation of the Committee on Medical Preparedness of the Medical Society of the State of North Carolina Dr. Dudley Smith of Waynesville, N. C., is available to the County Societies and District Societies desiring instruction and information on conditions existing in the bombed areas of England and what measures are instituted against them.

Dr. Smith has just completed a year's service as a surgeon with the Red Cross in England. He has just returned to America and is well prepared to speak of the conditions which he met and the measures instituted to meet them.

There is no fee for his services except those incident to the expense which he may incur in traveling.

Very truly yours,

HUBERT B. HAYWOOD, M.D., *Chairman*
DONNELL B. COBB, M.D.
CARL V. REYNOLDS, M.D.
Committee on Medical Preparedness.

WORLD CONFLICT AND AMERICAN MEDICINE

Never since the first World War has the United States been so wholeheartedly united as since the Japanese attack upon Pearl Harbor. As medical men, we are naturally proud of the fact that our profession was preparing for the conflict a year and a half before our country became an active belligerent. It is well to consider just how the world conflict may affect us, and to begin to plan for the preservation of the high ideals of our profession. The discussion of our position by John M. Pratt, Executive Administrator of the National Physicians' Committee, is of such interest to every doctor that it is reproduced in full.

Organized medicine, at an earlier date and to a greater degree than any other nation-wide group, recognized the inevitability of world wide conflict.

The Record

In June of 1940 the House of Delegates of the American Medical Association established the Committee on Medical Preparedness under the Chairmanship of Dr. Irvin Abell. There was no waiting for a declaration of hostilities. The Committee formulated plans for a survey of medical abilities and skills such as was never before undertaken. In July of 1940 this Committee began compiling an inventory of the medical resources of a nation of 130,000,000 people. Continuously since, the almost incomprehensibly detailed task has been in progress.

Selective Service

On September 16, 1940, President Roosevelt signed the Selective Service Act and it became the law of the land. It was recognized fully that the need was for personnel for wholly mechanized forces. Only the mentally and physically near-perfect could qualify to drive the tanks, man the guns, pilot the bombers and pursuit planes in this total war.

On October 16th began the registration of all American men between the ages of twenty-one and thirty-five. On October 29th a number was drawn from an open-top glass container. The process of selecting the physically and mentally fit for an armed force, which may eventually number more than six million fighting men, was under way.

Physicians volunteered their services to man the examining boards in every area in every state.

Direct Contribution

On December 7, 1941—fatal date—the traitorous Japanese attacked Pearl Harbor. Before December 7th more than 25,500 physicians, working on more than 6,400 local draft boards, had examined approximately two million five hundred thousand men.

During this period it was essential to expand the nation's industrial plant and equipment limitlessly to provide planes and ships, trucks and tanks, guns and ammunition. Thousands of millions of dollars were expended by the Federal government. Other thousands of millions were made available by the government to private industry for this purpose. These expenditures are not questioned. Had the amounts been double or treble, they could be justified on the basis of the all-important emergency need.

However, it is a fact that American physicians, without prospect or even thought of reward, contributed their services to an estimated value of nearly Twenty-five Million Dollars. Not one dollar of recompense was asked or received.

Scientific Contribution

From the scientific standpoint, the efforts were, in all likelihood, even more important. "War Medicine", a new medical journal under the editorship of Dr. Morris Fishbein, was established. With characteristic thoroughness and efficiency the medical experiences and discoveries of the peoples actually at war were assembled, edited and made available to the medical profession.

A New Agency

In October, 1941, the Medical Procurement and Assignment Service was established by Presidential executive order. This agency operates under the Office for Emergency Management, Office of Defense Health and Welfare Services. It is understood that, to meet the ultimate needs, every physician may have to be called upon to contribute to the full extent of individual capacity.

The Procurement and Assignment Service has established headquarters for sub-committees in each of the nine military corps areas in the United States. These corps area committees are supplemented by state committees in every state. Using as a foundation the findings of the Committee on Medical Preparedness, The Medical Procurement and Assignment Service is in a position to meet our rapidly expanding military medical needs, provide for adequate civilian health and medical services, and insure an irreducible minimum of sacrifice and dislocation.

Enviable Position

American Medicine anticipated this present need. It has established a new place for itself—through service.

World Conflict and the N. P. C.

The first paragraph of the first document ever published by the National Physicians' Committee (The Achilles Heel of American Medicine) reads:

"The weak spot in American Medicine is in its singleness of purpose. Its greatest danger lies in the exclusiveness of its devotion to scientific improvement and technical effectiveness."

Now, after Federal prosecution for criminal conspiracy, the real threat of the Wagner National Health Bill, and the menace of possible enactment of Compulsory Health Insurance, this statement is fairly well understood.

Under conditions now prevailing, the urge to "limit of capacity service" is irresistible. This introduces a new factor. Today, American Medicine's greatest danger lies in the possibility of refusing or failing to keep in mind medicine's fundamental concepts during a period of abnormal crisis.

Lest We Forget

Medicine must remember—must be made to remember—the fundamental factors that are responsible for its present place of pre-eminence. Its scientific achievement, its technical effectiveness, its capacity to anticipate this great emergency need, its ability to make the contribution it has made and will make in war effort are the result of conditions and principles under which it has been permitted to function.

The war in which we are engaged is as limitless as the farthermost reaches of the world in which we live. It is a war of ideologies. Our only "cause" is that of acknowledgment of the sanctity of human personality.

Vital Task

Possibly Doctors of Medicine have not fully understood nor been concerned about the concept of basic human right. They have invariably practiced it. The basic tenet of American Medicine has been that "where there was disease a life was the issue. It mattered not whether prince or pauper was involved." If we are to make progress this principle must be preserved and sanctified. The whole of men's concepts are in flux. This basic tenet may be lost or sacrificed unless we make a task of preserving it.

It is essential that, at whatever cost, this war be won. It will be won. However, the form and the design of a post-war world will be determined by the steps taken now and during the period of the conflict to preserve intact the important elements of the principle for which the war is waged.

On the Record

What position will medicine occupy in the post-war world? We quote from an N. P. C. bulletin published (the date should be noted) on November 12, 1940:

"We are confronted with war. We are faced with the insistent, compelling, all-important necessity of creating an adequate defense mechanism and organization. In all likelihood, armed conflict is imminent. We are forced to admit the necessity of certain centralizations of power to insure the most efficient and effective operation of our industrial plant and productive equipment. These are realities of the present.

"It is essential that we understand that, to the extent we move toward a form of Fascism, Naziism, Communism — totalitarian control — will we affect the practice of medicine in the United States. Under any form of governmental, social and economic structure, medicine must and will occupy merely its relative place.

"If the independence of medicine, our doctor and patient relationship, and our pattern of medical practice are to be preserved, we must preserve the principles underlying our free institutions."

There are no changes in the situation save the greatly increased tempo and the actualities of conflict.

Political Forms

Actually conducting the war are political administrations. Notwithstanding Pearl Harbor, the fall of Hong Kong, the siege of Singapore, MacArthur's heroic defense, the Libyan battles and the retreat of Germans on the Russian front, political aspirants are seeking nominations of their parties for senatorships and congressmen. Within the Congress Senators and Congressmen are vying with each other for places of power and authority. Within the Administration, Cabinet members and administrative officials are constantly forcing their claims for consideration or preferment. This is as it should be. However it must constantly be remembered that actions which may adversely affect medicine's effectiveness may result from political decisions.

Final political decisions are based upon the politician's beliefs of—"The understanding and convictions of the public—public opinion." In this sphere, medicine has an important, probably a decisive role to play.

In the N. P. C. Post-election Statement of Policy (November, 1940), Dr. Edward H. Cary, its Chairman, said:

"The medical profession now represents the only important group in the United States which, while harassed from within and without, has shown no slightest signs of capitulation or even of retreat.

"On the basis of this fact, it has automatically placed itself in the position of an intellectual leadership of those individuals, groups and institutions which seek to preserve the important elements of individual freedom and initiative and **the principle of 'Private Enterprise'.**

"If we live up to this opportunity and the serious responsibility it entails, the physicians of this country can—while preserving the independence of American Medicine—most importantly and vitally serve their country during its period of crisis and greatest stress."

This continues to be the position and policy of N. P. C.

Morale

Practically, unlimited resources are available. The production machinery is being provided to deliver the ships, tanks and aircraft, the guns and ammunitions in a never-ending stream. These are valueless without men—healthy men. We have the men. Their quality and their final effectiveness is wholly dependent upon their understanding of and their convictions relating to the fundamental rightness of our cause.

There would be no gain—there would be irretrievable loss—if the war is won and there is failure in taking steps to insure the peace. There must be no shadow of doubt as to our undertaking to establish the principles of "individual human right." In addition to its technical tasks, American Medicine must assume its fair share of this—the greatest single responsibility.

Medicine's Relative Place

In January, 1939, American Medicine was seriously menaced. It was facing criminal prosecution in Federal courts, threatened with destructive and restraining legislation, and was the victim of vicious propaganda designed to destroy the confidence of the public in its motives and its effectiveness. Today Medicine is respected. It is being accorded a confidence and an authority which enables it to render the most important single service in the all-encompassing effort to win—THE WORLD WAR.

In the achievement of this altered status and enviable position, the National Physicians' Committee has substantially aided. Its contribution has been supplementary—but it has been of vital importance.

NATIONAL PHYSICIANS' COMMITTEE POLICY AND PROGRAM

The National Physicians' Committee pledges itself to the prosecution of three vital tasks:

1. To use its knowledge, its machinery, its strengths to aid — without qualification — in winning the war.
2. To utilize to full capacity its contacts, its resources, its facilities, its proven methods and its developed techniques to the end that:
   a. basic issues and vital principles be kept clearly defined and be not lost or obscured in the haze of emotional reactions;
   b. morale be maintained;
   c. peace, in accord with fundamental concepts, may be won.
3. To maintain constantly "The Alert" and be continuously active in necessary and important spheres in an unlimited effort to preserve for the medical profession the independence and freedoms essential to its continued progress and greatest effectiveness in public service.

BULLETIN BOARD

PRESIDENT'S MESSAGE

On Monday, March 23, the members of the American College of Surgeons of Virginia, North Carolina and South Carolina will meet for a three days' session at the Washington Duke Hotel in Durham. At the same time and place there will be a meeting of those interested in Hospital Management. Programs of both meetings are given below. All physicians of the three states, regardless of whether they are members of the state medical societies, are cordially invited and urged to attend. Medical officers of both the United States Army and Navy, and representatives of the United States Office of Civilian Defense will be present and take active part. This meeting will give every doctor an opportunity to obtain first hand information about military service. Those who attend should be well repaid for their time and effort.

F. WEBB GRIFFITH, M. D.

* * *

American College of Surgeons—War Sessions
One-Day Meetings

Outline of Program for Members of the Medical Profession

9:00 A.M.-9:45 A.M.—Panel Discussion: Treatment of War Injuries to the Skull and Face.
9:45 A.M.-10:35 A.M. — Panel Discussion: Treatment of War Injuries to the Chest.
10:45 A.M.-11:15 A.M. — The Organization and Functions of the Medical Department of the U. S. Army.
11:15 A.M.-11:45 A.M. — The Organization and Functions of the Medical Department of the U. S. Navy.
11:45 A.M.-12:15 P.M.—The Doctor and the Hospital in Civilian Defense.
12:30 P.M.-2:00 P.M. — Luncheon — Address and Round-Table Discussion of Procurement and Assignment Service.
2:15 P.M.-2:50 P.M.—Panel Discussion: Treatment of Wounds of Soft Parts.
2:50 P.M.—3:30 P.M.—Panel Discussion: Prevention and Treatment of Hemorrhage.
3:45 P.M.-5:00 P.M.—Panel Discussion: Fractures.
6:00 P.M.-7:30 P.M.—Dinner.
7:30 P.M.-8:00 P.M.—Activities of the American College of Surgeons and Their Relation to the Defense Program.
8:00 P.M.-9:00 P.M.—Panel Discussion: Treatment of Burns.
9:00 P.M.-10:00 P.M.—Panel Discussion: Prevention and Treatment of Shock.

Outline of Program for Hospital Representatives

9:00-10:30 A.M.—Forum: Civilian Defense as Affecting Hospitals—Conducted by Representative of the United States Office of Civilian Defense.
10:45 A.M.-12:15 P.M.—Joint Sessions for those in attendance at the meeting, including Physicians, Surgeons, and Hospital Representatives. Addresses by Representatives of the United States

Army, Navy, and United States Office of Civilian Defense:

The Organization and Functions of the Medical Department of the United States Army.

The Organization and Functions of the Medical Department of the United States Navy.

The Doctor and the Hospital in Civilian Defense.

12:30-2:00 P.M. — Luncheon for Physicians, Surgeons, and Hospital Representatives, followed by an address on the Procurement and Assignment Service.

2:15-5:00 P.M.—Panel Discussion: Hospital Problems Incident to the War:

Priorities.

Maintaining Adequate Professional and Non-Professional Personnel.

Relation of the Procurement and Assignment Service to the Hospital.

Organization of the Hospital for Civilian Defense.

Maintaining Standards of Service.

Meeting the Increasing Costs of Hospital Service.

6:00-7:30 P.M.—Dinner.

7:30-8:00 P.M.—Activities of the American College of Surgeons and Their Relation to the Defense Program.

8:00-10:00 P.M.—Panel Discussion: Treatment of Burns.

Panel Discussion: Prevention and Treatment of Shock.

Postgraduate Courses in Obstetrics and Gynecology

The State Board of Health, Duke Hospital and the North Carolina Medical Society are again cooperating in a program of postgraduate training in obstetrics and pediatrics for general practitioners. These courses are being made available by appropriations from the United States Children's Bureau. The courses will last five days, Monday through Friday, and will be repeated weekly through the spring and summer or as often as there is a demand.

The classes are to be limited to a minimum of four and a maximum of six physicians a week. The course will be informal, clinical and practical. There will be no examinations given and no certificates will be issued. The courses will be conducted by Dr. A. W. Makepeace (obstetrician) and Dr. Robert B. Lawson (pediatrician) of the departments of Obstetrics and Pediatrics of Duke Hospital. This is an excellent opportunity for general practitioners and health officers to brush up on the latest methods and practices.

There will be no expense to physicians attending these courses. Meals will be furnished in the doctors' dining room at Duke Hospital and rooms will be available in the graduate dormitory on the Duke campus.

News Notes From the State Board of Health

The upward trend in North Carolina births, which has gained in momentum with the progress of World War No. 2, continued unabated in January, 1942, the second month of America's actual participation in hostilities. Last month, according to official figures compiled by the State Board of Health's Division of Vital Statistics, there were 7,162 babies born in this State, as compared with 6,071 in January, 1941, a gain of 1,091, or 18 per cent, for this one month.

Births for the calendar year of 1941 totaled 85,366, which was 4,395 in excess of the number reported in 1940. Only two months, January and November, showed a decline under the previous year. During the remaining ten months substantial gains were reported. A decline in deaths has accompanied the sustained gain in births.

An encouraging feature of the January, 1942, report, the first issued during the present calendar year, was the decline reflected in the infant mortality rate, which dropped from 68.7 in January a year ago to 60.7 last month, a decrease of eight points, while the downward trend in the maternal death rate continued. Although there were 7,162 live births reported in the State last month, there were only 30 maternal deaths, as compared with 32 during the corresponding month a year ago, the monthly rate having dropped from 5.3 to 4.2. There were no deaths from puerperal septicemia. Four such deaths occurred in January, 1941, and 53 during last year, but this figure was decidedly lower than the 1940 total, which was 112. This marked decline is attributed by physicians to new methods of treatment, which have proved highly successful.

* * *

Dr. Carl V. Reynolds, State Health Officer, has issued the following statement with respect to delayed birth certificates:

"In view of the emergency, the rush for certified delayed birth certificates now is unprecedented.

"The North Carolina law, as amended in 1941, provides that an application for a delayed birth certificate be made to the register of deeds of the county in which the applicant was born, and not to the State Board of Health. If all applicants would bear this in mind, it would save much time now devoted to unnecessary correspondence and would insure quicker service.

"A delayed certificate is the record of one who was born prior to October, 1913. Please bear this date in mind. If the applicant needs instruction as to what proof is necessary, the register of deeds, in each instance, will supply it. If the applicant knows what proof is necessary and furnishes it, the register of deeds will see the matter through.

"The only fees necessary are those prescribed by law to be paid registers of deeds for recording births and furnishing certified copies of certificates.

"Only those persons born after October, 1913, should apply to the State Board of Health at Raleigh—all others to registers of deeds, as pointed out above."

* * *

During the past few days widespread publicity has been given the fact that the federal government has found it necessary to curtail, to some extent, the preparation and sale of certain vitamins.

"This need cause no undue alarm," it was pointed out here by Dr. Carl V. Reynolds, State Health Officer, who is also chairman of the State Nutrition Council.

"One need only to know a few elementary facts about nutrition to realize that, in this country, the average person can have all the essential vitamins by following a few simple guides," he continued. "Fresh foods and those that have been properly preserved by methods that are now well-known contain all the natural vitamins necessary for a well-balanced metabolism. Information as to these methods can be furnished by the Extension Department of the North Carolina State College at Raleigh, which is doing a splendid work along this line.

"Diagnoses of vitamin deficiencies should, of course, be made by competent physicians. Where

these deficiencies are serious, it may be necessary to supplement the natural vitamins with processed ones.

"This whole matter may be summed up in the slogan coined by the eminent nutritionist, Dr. E. V. McCallum, who said: 'Eat what you want, after you have eaten what you should.' In other words, eat every day the necessary amounts of protective foods; and, after that, eat whatever your appetite calls for."

* * *

Dr. Carl V. Reynolds, State Health Officer, has announced receipt of a telegram from Dr. E. R. Coffey, of the United States Public Health Service in Washington, stating that the Office of Production Management has stopped releasing cadmium for use in the manufacture of food containers.

Recently, Dr. Reynolds, at the request of Federal Security Administrator, Paul V. McNutt, issued a warning against the use of cadmium-plated food utensils because of the fact that a number of cases of food poisoning had been traced to this source.

News Notes From Duke University School of Medicine

At the beginning of the winter quarter, there were 247 medical students—74 first year, 62 second year and 111 juniors and seniors.

* * *

On November 11, 1942, Dr. Michael Heidelberger, of the Department of Medicine of the College of Physicians and Surgeons, New York City, spoke to the Duke Medical Society on "Recent Advances in the Knowledge of Complement and Its Functions."

* * *

The following have addressed the staff and students: December 10, 1941—Dr. J. M. McIntosh, Professor of Public Health, University of Glasgow, Scotland, on "The Medical Student in War Time"; January 14, 1942—Mrs. Mary P. Diaz, of Puerto Rico, on "Occupational Therapy in Puerto Rico"; February 11—Ralph Linton, Professor of Anthropology at Columbia University, New York City, on "Culture in the Normal Personality".

* * *

Dr. R. W. Graves, Assistant Professor of Neurology, has been appointed as one of the Army Consultants on Meningitis.

* * *

Dr. J. M. Ruffin, Associate Professor of Medicine, has been appointed as one of the Army Consultants on Tropical Diseases.

News Notes From the University of North Carolina

Dr. Herman C. Mason has been appointed Associate Professor of Bacteriology and will begin his work in the spring quarter of this year. Dr. Mason had his work in Bacteriology at the University of Illinois and in the Department of Immunology in the School of Public Health of Johns Hopkins University.

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Dr. W. R. Berryhill, Dean of the School of Medicine, attended a meeting of the Association of American Medical Colleges and of the Council on Medical Education and Hospitals of the American Medical Association, February 14 to 17.

In addition to the Postgraduate Courses in Medicine held in Durham, Fayetteville, Raleigh and Kinston, two additional courses sponsored by the University Medical School and the Extension Division will be given in the late spring in Gastonia and Salisbury. Meetings will be held in Gastonia on Mondays and in Salisbury on Tuesdays of each week from March 30 through May 5, 1942. The program for both courses is as follows:

March 30, 31—Diagnosis and Treatment of Anemias—Dr. Roy R. Kracke, Emory University, Atlanta, Ga.
April 6, 7—Pediatrics—Dr. Aims C. McGuiness University of Pennsylvania, Philadelphia.
April 13, 14—Surgery—Lecturer to be announced.
April 20, 21—Heart Disease—Dr. Samuel A. Levine, Harvard University, Boston.
April 27, 28—Obstetrics—Dr. Robert E. Seibels, Columbia, S. C.
May 4, 5—Medical Problems of the Army and Navy—Lecturer to be announced.

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The entire second-year class in the School of Medicine, forty-one students, have been transferred to the following four-year schools to complete their training for the M.D. degree.

University of California—Jerry Gavce; Cornell—B. R. Swan; Duke—O. Watts Booth; Emory—Edmund D. Bennett, J. H. Miller; Harvard—H. W. Harris, T. L. Murphy, Beecher W. Sitterson; Jefferson—Chas. H. Edwards, John F. Lynch, Robt. A. McLemore, Geo. W. Plonk, C. L. Putzel, Wm. Henry Shull, R. E. Sumner; Johns Hopkins—R. S. Perrin; Maryland—Worth Kirby, I. Floyd Nesbitt, John T. Stegall; McGill—Louis D. Hayman, Hunter Heath; New York Medical College—Hillard Gold, Wm. Tenenblatt; Northwestern—Wm. O. Beavers, Harry W. Sparrow; University of Pennsylvania—F. A. Blount, James E. Davis, John B. McDevitt, Baxter G. Noble, J. D. Piver, Hugh Smith; South Carolina—Richard E. Hedrick; Vanderbilt—B. R. Williams; Medical College of Virginia—Robert P. Beckwith; University of Virginia—Henry Boone, Willard C. Hewitt, Wm. Edwin Hoy, Wm. Lunsford Long; Washington University—J. Harry Allen, Alfred Costner, I. W. Rose.

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Dr. William Allan, Professor of Medical Genetics of the Bowman Gray School of Medicine of Wake Forest College, lectured on "Heredity and Disease" on February 12 to the students and faculty of the Schools of Public Health and Medicine.

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Dr. Manuel B. Marquez Escobedo, Director of the training station for public health personnel connected with the School of Public Health of Mexico, spent a week during February visiting the School of Public Health of the University of North Carolina, the Orange-Person-Chatham District Health Department and the State Board of Health at Raleigh.

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Miss Naomi Deutsch, Director of Public Health Nursing of the U. S. Children's Bureau, Washington, spent several days in Chapel Hill during February, where she visited the Department of Public Health Nursing of the School of Public Health.

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Dr. George W. McCoy, formerly Medical Director of the National Institute of Health, and now Professor of Preventive Medicine at the School of Medicine of Louisiana State University, New Orleans, spent the week of February 15 to 21 in Chapel Hill. Dr. McCoy gave a series of lectures on tularemia and leprosy for the students in the School of Public Health.

News Notes From the Bowman Gray School of Medicine of Wake Forest College

Dr. C. C. Carpenter, Dean, attended the Congress on Medical Education held in Chicago on February 13-16, 1942.

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The Interurban Obstetrical and Gynecological Club met at the Bowman Gray School of Medicine on February 23.

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A joint meeting of the faculty of Wake Forest College and the faculty of the Bowman Gray School of Medicine was held at the Williams Club in Wake Forest on March 3, 1942. Moving pictures of the medical school plant and the North Carolina Baptist Hospital were shown by Dr. James F. O'Neill, a member of the faculty of the medical school. Thirty new members of the faculty of the medical school were introduced by Dr. C. C. Carpenter, Dean.

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Dr. Morris Fishbein, Editor of the **Journal of the American Medical Association** will be the guest of the medical school on March 13. Dr. Fishbein will address the Winston-Salem Chamber of Commerce on that date and will be introduced by Dr. Donnell Cobb, President-Elect of the Medical Society of the State of North Carolina.

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The American Association for the Study of Neoplastic Diseases will meet at the medical school on April 23, 24 and 25.

Buncombe County Medical Society

The Buncombe County Medical Society heard Dr. Dudley W. Smith, formerly with the American Hospital in Britain, speak on "War Injuries and War Medicine" on March 2.

Guilford County Medical Society

The Guilford County Medical Society held one of the largest meetings in the history of the Society at the Sheraton Hotel in High Point on February 5. The topic of the meeting was "The Physician and the War Emergency", and the speakers were General Henry C. Coburn and Captain Everett I. Bugg, both of the army medical corps stationed at Fort Bragg. General Coburn's subject was "How Doctors Help in National Defense", and Captain Bugg spoke on the "Treatment of Compound Fractures Among War Casualties".

Dr. Dennis B. Fox, Dr. William B. Dalton, and Dr. J. E. Young were elected to membership in the Society. Officers of the Society for 1942 are Dr. M. D. Bonner, President; Dr. H. F. Starr, Vice President; Dr. A. Ray Dawson, Secretary; and Dr. J. L. Cook, Treasurer. Delegates to the State Medical Society are Dr. Fred M. Patterson, Dr. B. E. Rhudy, Dr. George Wood, Dr. C. T. Whittington, and Dr. I. T. Mann.

Halifax County Medical Society

Dr. E. L. Persons of Duke University was the guest speaker of the Halifax County Medical Society at its meeting on February 13. His subject was "Pneumonias Not Responding to Sulfonamide Therapy". The Society voted to adopt a plan of examining junior and senior high school students for remediable defects.

Haywood County Medical Society

The Haywood County Medical Society held its February meeting at the Haywood County Hospital. Dr. J. L. Reeves of Canton gave a paper on "Circulatory Diseases".

American Urological Association

The American Urological Association, Southeastern Section will meet at the Patten Hotel in Chattanooga, Tennessee, on March 19, 20, 21.

This meeting is not only for urologists but for all members of the medical profession. All physicians who are not members will be registered free of charge.

The Second American Congress on Obstetrics and Gynecology

The Second American Congress on Obstetrics and Gynecology will be held in St. Louis, Missouri, April 6-10, 1942. This five day program will include general assemblies and individual group meetings on medical, nursing, public health and institutional administrative problems relating to the factual and scientific aspects of maternal and infant care.

The problems will be presented by national authorities as scientific papers, demonstrations, round tables, and in addition, personal interviews and consultations. The general medical profession is urged to join this Second American Congress. A membership fee of $5.00 will include registration fee for the St. Louis meeting.

Southeastern Surgical Congress

The Southeastern Surgical Congress held its thirteenth annual Post-Graduate Assembly at the Biltmore Hotel in Atlanta March 9, 10 and 11, 1942. War Time medicine and surgery presented by distinguished authorities was a prominent feature of the program. In addition to the regular papers the following special papers were given:

"The Medical Profession and War Duties"—by Dr. Fred Rankin, Lexington, Ky.

"How Can the Medical Profession Augment National Efficiency During War Time?"—by Col. Leonard G. Rowntree, Washington, D. C.

"Medical and Surgical Service in the Training Camps"—by Col. Sanford W. French, Atlanta.

"Early and Late Treatment of the Face and Jaws As Applied to War Injuries"—by Dr. Robert H. Ivy, Philadelphia, Pa.

"The Part the Railroad Surgeon May Play in The National Emergency"—by Dr. Joseph D. Collins, Norfolk, Va.

"War and the Nutrition of the Nation"—by Dr. J. S. McLester, Birmingham, Ala.

"The Medical Profession in the South in Time of War"—by Dr. Julian L. Rawls, Norfolk, Va.

"Field and Hospital Services for Civilian Casualties"—by Dr. George Baehr, Washington, D. C.

Mr. Paul V. McNutt, Washington, D. C., addressed the Congress on the Preparedness Program.

News Notes

Dr. William P. Knight of Greensboro died on February 3.

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Dr. N. F. Lancaster of Waynesville has volunteered his services in the Army, and has been sent to Camp Gordon, Augusta, Georgia.

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Dr. J. G. Tillery has left Enfield to enter general practice in Wilson.

AUXILIARY

HYGEIA

The *Hygeia* Committee of the State Medical Auxiliary was created at the 1931 meeting of the Auxiliary in Durham. This was done at the suggestion of Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association.* He felt that as an organization interested in health and medical problems we could build up the circulation of *Hygeia* in the state. This is the one job the American Medical Association has given the Auxiliary to do. We must not fail.

Hygeia is the authentic health magazine for lay readers published by the American Medical Association. *Hygeia* presents scientific health information in an interesting and understandable form for lay readers. We must do our part to get it before the reading public. Any one who has it within his or her power to help *Hygeia* disseminate its information to the laity, and fails to do so, is neglecting part of his duty in the National Defense program. *Hygeia* has always been in the forefront of national defense. It has been concerned with the health of the individual from the prenatal period to the end of life. Its main objective is health education for the purpose of building a more healthful and therefore a stronger and more efficient nation. Food and nutrition, keeping physically fit, maintaining a healthy mental attitude—all these points are vital today in our strenuous war program. *Hygeia* supplies reliable information on these subjects.

Women's organizations are focusing their attention on problems of health for defense. It is our responsibility as wives of doctors to refer them to *Hygeia,* where they can obtain authentic information from experts. We must assist these organizations to become health conscious and health wise.

A year's subscription to *Hygeia* is $2.50. Of this amount our Auxiliary receives a percentage commission. This money goes to the McCain Endowment Fund, which seeks to raise $10,000 to insure the maintenance of the McCain Bed at the State Sanatorium. Any physician, nurse, medical student, or member of a physician's family suffering from tuberculosis may occupy this bed and the Stevens bed maintained at Western Sanatorium. The Auxiliary receives credit only for subscriptions sent through the *Hygeia* Chairman.

The quota for the North Carolina Medical Auxiliary is 416 subscriptions this year. The quota assigned is the number of paid-up members in the Auxiliary at the close of the preceding fiscal year. North Carolina has never come anywhere near reaching its quota. If every doctor's wife in North Carolina would secure just one subscription, we could more than double the quota. If you would like to subscribe to *Hygeia,* or know some one who will subscribe, please send the name, address and $2.50 to Mrs. W. G. Byerly, Lenoir, N. C., and the subscription will be entered promptly. Remember every subscription you send in will be of benefit to the medical and nursing professions both directly and indirectly, and will disseminate authentic health information to the public.

MRS. W. G. BYERLY,
Chairman of *Hygeia.*

NOTICE

Haddon Hall will be the headquarters for the Annual Meeting of the Woman's Auxiliary to the American Medical Association, which will be held in Atlantic City, New Jersey, June 8-12, 1942.

Requests for reservations should be sent immediately to Haddon Hall, Atlantic City, New Jersey.

The individual physician must protect the families in his care, and through them the community, by urging physical examination of domestic employees. Repeated emphasis on the necessity of this should result in the earlier diagnosis of tuberculosis and in the prevention of exposure to infants and children from this source of infection. An annual health certificate declaring freedom from syphilis, gonorrhea and tuberculosis should be the requisite for the position of nursemaid.—David V. Shar, M.D., Journal-Lancet, June 1940.

Any Physician May Exhibit "When Bobby Goes to School" to the Public.—Under the rules laid down by the American Academy of Pediatrics, their new educational-to-the-public film "When Bobby Goes to School" may be exhibited to the public by any licensed physician in the United States.

All that is required is that he obtain the endorsement by any officer of his county medical society. Endorsement blanks for this purpose may be obtained on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Such endorsement, however, is not required for showings by licensed physicians to medical groups for the purpose of familiarizing them with the message of the film.

"When Bobby Goes to School" is a 16-mm. sound film, free from advertising, dealing with the health appraisal of the school child, and may be borrowed by physicians without charge or obligation on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

BOOK REVIEWS

Diseases of the Blood and Atlas of Hematology. By Roy R. Kracke, M.D., Professor of Pathology and Bacteriology, Emory University. Second edition. Price, $15.00. Philadelphia: J. B. Lippincott Company, 1941.

This book retains its place as the best work in English on diseases of the blood. In the second edition Dr. Kracke has added new material on the important subjects of fractionation of liver extract, hemolytic anemias, hemoglobinuria, the action of drugs on the blood, hemoglobin and its derivatives, and the porphyrin compounds. Material is also included on blood transfusion and the operation of a blood bank. Other additions to the book are discussions of osteosclerotic anemia, achrestic anemia, ovalocytosis, Hodgkin's disease, histoplasmosis, and much material on vitamin K.

Dr. Kracke has placed before the medical profession a comprehensive summary of the present status of our knowledge of the diseases of the blood and blood forming organs. Hours with this book are well spent. Many of the color plates are poor, but even with this drawback the book is highly recommended.

Functional Pathology. By Leopold Lichtwitz, Chief of the Medical Division of the Montefiore Hospital; Clinical Professor of Medicine, Columbia University, New York. 570 pages, with 198 illustrations. Cloth, $8.75. New York: Grune & Stratton, 1941.

The present volume attempts to analyze the mechanism of symptoms in relation to the signs of disease and to coordinate the clinical findings with functional disturbances. A number of clinical conditions are taken up from this refreshing and interesting viewpoint. Particular emphasis is placed on the role of the hypothalamus and vegetative centers, which are invested with an importance usually ignored. Until more is known of the fundamental physiology of the hypothalamus there will be a tendency to attribute all obscure functional disturbances to hypothalamic disorder. Nevertheless, there can be no doubt that the hypothalamic centers play an important role in the animal economy and are responsible for many dysfunctions (e. g., that observed in Froelich's syndrome, certain instances of diabetes insipidus, etc.) hitherto erroneously attributed to hypophyseal disturbance.

Although the book is, in general, lucidly written, more careful editing would have avoided such Teutonic sentences as the following (quoted from p. 41): "Alone the doubling of the weight of the heart is bound to add 5 per cent to the total metabolism."

"Deviations of the basal metabolic rate, decrease as well as increase, are found in Bright's disease."

The principal criticism offered to the present volume is the neglect of recent work which in many cases contradicts earlier work quoted. Thus, the antithyroidal action of adrenal cortical therapy is cited (p. 165), although all recent work has repudiated this concept; the chapter on hypertension ignores all the recent basic contributions. In spite of these criticisms, the reader will find much to stimulate his interest and many original concepts of everyday medical problems.

The publishers, who with the present volume enter the medical publishing field, are to be congratulated for an excellent technical job in bookmaking.

Symptom Diagnosis. By Wallace Mason Yater, M.D., M.S., (in Medicine), F.A.C.P., Professor of Medicine, Georgetown University School of Medicine; Physician-in-Chief, Georgetown University Hospital; Physician-in-Chief, Gallinger Municipal Hospital, Washington, D. C. Fourth Edition. 900 pages. Price, $10.00. New York: D. Appleton-Century Company, 1942.

The usefulness of this work—originally written by Dr. Yater in collaboration with the late Dr. Wilfred M. Barton—is attested by the fact that this is the fourth edition. Its purpose, as expressed in the preface to the first edition, is "to aid the busy physician in the diagnosis of his case by allowing him to quickly reduce the number of possibilities to a small list; to prevent the oversight of important considerations; and to make the medical man more observant of the characteristics of the symptoms of disease."

It is virtually impossible to review such a book in detail, but it is enough to say that the fourth edition fully carries out the threefold purpose of the first one. After testing it out in a number of recent medical problems, this reviewer was impressed by the practicability of the work, by its up-to-dateness, and by the author's marvelous ability to compress a vast amount of information into a few words. To the busy practitioner it can be heartily recommended as worthy of a convenient place on his desk, where it will be at hand for daily use.

Chinese Lessons to Western Medicine. By I. Snapper, Professor of Medicine, Peiping Union Medical College, Peiping, China. With a foreword by George R. Minot, Professor of Medicine, Harvard University. 380 pages, illustrated. Price, $5.50. New York: Interscience Publishers, Inc., 1941.

Just as a study of comparative anatomy and physiology is essential for an understanding of these subjects, so may a study of the diseases occurring in various branches of the human race contribute to our understanding of the afflictions of our local populace. The diseases occurring in any given area reflect the social, economic and geographic environment as well as the state of sanitation, medical care and diet of the population. It is for these reasons that a study of the peculiarities of disease as encountered in far-off China can be of value to the observant physician in broadening his concepts and teaching him the variability in characteristics manifested by a given disease.

The present volume covers a great variety of conditions, including nutritional disturbances, tuberculosis and other infectious diseases, renal, cardiac, vascular and hepatic disorders, as well as certain conditions more specifically associated with Oriental peoples. The book is well written and illustrated and should prove both interesting and instructive to the medical reader. He will find much to stimulate thought in the many observations recorded by Dr. Snapper in this valuable contribution to geographic medicine.

Encephalitis: A Clinical Study. By Josephine B. Neal, A.B., M.D., Sc.D., F.A.C.P., Associate Director, Bureau of Laboratories, Department of Health, New York; Clinical Professor of Neurology, College of Physicians and Surgeons, Columbia University. 570 pages, with illustrations and tables. Cloth, $6.75. New York: Grune and Stratton, 1942.

The William J. Matheson Commission for Encephalitis Research was established in 1927, through the generosity of Mr. Matheson, himself a victim of encephalitis. The present monograph supplements the earlier reports published by this Commission in 1929, 1932 and 1939, and represents a survey of our knowledge of the various forms of this disorder. All aspects of the subject, including the epidemiology, complications, clinical course and treatment are critically reviewed.

It is only during the last quarter of a century that encephalitis has been recognized as a clinical entity, and although many aspects of the disease are still not elucidated, much knowledge has been accumulated. Dr. Neal and her collaborators have made a notable contribution with this excellent monograph, which should prove of the greatest value to all interested in the group of disorders designated as encephalitis.

William Henry Welch and the Heroic Age of American Medicine. By Simon Flexner and James Thomas Flexner. 539 pages. Price, $3.75. New York: The Viking Press, 1941.

When the history of American Medicine is written, William Henry Welch will undoubtedly stand out as the one individual most responsible for the developments which have made this country pre-eminent in medical science. Welch was a leading spirit in the early years of Johns Hopkins, in the Rockefeller Institute for Medical Research, and in the International Medical Board. In fact, he had a hand in all decisions which, although taken for granted today, were at the time they were made of vital importance in determining the future of American Medicine.

The present book is written by Dr. Simon Flexner, Director Emeritus of the Rockefeller Institute and a former pupil and associate of Welch, and his son, James Flexner, author of several earlier volumes. The book is well written and carefully documented. It presents in an interesting way not only the biographical career of Welch but also the background of American medical history in the making, of which Welch was the leading figure.

Every doctor should be acquainted with this saga in order that he may understand and appreciate the currents of medical thought of which he himself is an integral, if perhaps only an inconsequential, part.

The Doctors Mayo. By H. B. Clapesattle. 812 pages with numerous plates. Price, $3.75. Minneapolis: The University of Minnesota Press, 1941.

"They were born at the right time" is the keynote of this well written biography, **The Doctors Mayo.** The first account that has been written of these three remarkable men—William W., William J., and Charles H. Mayo—whose lives spanned a century of American medicine, "whose genius transformed a geographical pinpoint among the cornfields and dairy farms of Minnesota into a great starred capital in the world of medicine", reads like a history of medical progress rather than the biography that it is.

This interesting book, which is full of humorous anecdotes, describes frontier medicine vividly, through the lives of three men who were pioneers in many medical fields. One reads of the honors bestowed upon them and the criticisms to which they were subjected, all of which the Mayos received gracefully. Much of the story centers about the old Doctor Mayo, and rightfully so. Charlie Mayo once said, "The biggest thing Will and I ever did was to pick the father and mother we had."

H. B. Clapesattle has searched through files, old case histories, newspapers, letters and papers, and has gleaned a wealth of material, which he has organized into a fitting tribute to the memory of these famous men.

What Price Alcohol? By Robert S. Carroll, M.D., Medical Director, Highland Hospital, Asheville, North Carolina. 362 pages. Price, $3.00. New York: The Macmillan Company, 1941.

Dr. Carroll, who is founder and medical director of Highland Hospital in Asheville, North Carolina, has written a very readable book concerning what he considers the dangerous menace of alcohol to society. Dr. Carroll is not one of those medical apologists for alcohol who have blossomed into print during the past few years. In fact, it may be said that he goes to the other extreme in feeling concern about the use of alcohol even in what has been called "moderation".

Dr. Carroll agrees with most of the other writers on this subject that total abstinence is a necessity for the addict. Dr. Carroll's monograph is particularly appropriate in view of the fact cited in the book that one large insurance company has increased its proportion of rejections on the grounds of "heavy alcoholic indulgence" from 12 to 34 per cent during the past ten years. Dr. Carroll has had long experience in the handling of alcoholic patients and his book is rich both in practical points and in a philosophical discussion of the more fundamental problem of alcoholism.

Any physician who is giving particular attention to the problem of alcoholism would profit by the addition of this book to his library.

Necropsy. By Bela Halpert, M.D., Assistant Professor of Pathology and Bacteriology, Louisiana State University. 75 pages. Price, $1.50. St. Louis: The C. V. Mosby Company, 1941.

This is a small, inexpensive guide for those interested in acquainting themselves with the method of removal and examination of organs advocated by Anton Khon.

Sulfanilamide and Related Compounds in General Practice. By Wesley W. Spink, Associate Professor of Medicine, University of Minnesota Medical School. 256 pages. Price, $3.00. Chicago: The Year Book Publishers, Inc., 1941.

Sulfanilamide and its derivatives have become so invaluable in medical practice in such a comparatively short time that the average practitioner has been unable to keep up with the rapid advances in this field of chemotherapy. The book under consideration will clarify for the practitioner such problems as the indications for the sulfonamides, which one to use in any given case, dosage, administration, and toxicity. The book is based on the personal experience of the author and on the extensive literature extant on the subject. It is as up-to-date as any volume on a subject under active current investigation can be.

Methods of Treatment in Postencephalitic Parkinsonism. By Henry D. von Witzleben, M.D., Elgin State Hospital, Elgin, Illinois. 135 pages. Price, $2.75. New York: Grune and Stratton, 1942.

This excellent monograph, bringing up to date the available information on the management of postencephalitic Parkinsonism, fills an important niche in the literature on this subject. The author concerns himself principally with methods of therapy, utilizing only a very short section of the book for a discussion of diagnoses and differential diagnoses. The discussion of therapy he divides into ten headings—namely, chemotherapy, serum therapy, vaccine treatment, intralumbar methods, surgical therapy, fever therapy, roentgen therapy, treatment with medicaments, alkaloid therapy, and outline of treatment by physical exercises and calisthenics.

Considerable space is given to the discussion of the so-called Bulgarian treatment. An interesting aspect of this section is the fact that specific information as to the proprietary preparations of the Bulgarian belladonna root is given.

For those physicians who have fallen into a fatalistic way of thinking regarding the unfortunate sufferers with this disease, Dr. Von Witzleben's monograph will serve a salutary purpose, although it is too true that most of these patients can not be cured. Many of them can be helped remarkably, however, by the proper application of our knowledge regarding alkaloidal and other therapy.

Dr. Darby, Noted Scientist in Vitamin Fields, on Borden Staff

The Borden Vitamin Company, which has been bringing into its fold a number of research and production leaders in that field, announces that Dr. Hugh H. Darby, distinguished Columbia scientist and author of many authoritative works, has joined its staff for research and development in the production and application of vitamins and hormones.

Dr. Darby, who has been with the Department of Biochemistry of the College of Physicians and Surgeons for the past seven years as research associate, is a specialist there on vitamins and hormones, achieving wide attention for his work on the extraction and physiology of sex hormones.

Among other distinctions, Dr. Darby is noted as the discoverer of the existence of Vitamin D in plant life, and for his spectographic research on vitamins A, D and K. He originated the system, widely used by the Department of Agriculture, of heat treatment for the destruction of harmful insects.

In Memoriam

JOSEPH E. NOBLES, M. D.

It is with extreme regret that the members of the Pitt County Medical and Dental Society acknowledge the loss of one of the Society's senior and most faithful members, Dr. Joseph E. Nobles, on December 13, 1941.

Dr. Nobles was born on April 14, 1874, in Pitt County, and spent his entire life there. He was educated in the public and private schools of Greenville and attended the University of North Carolina, where he began the study of medicine. He continued this study at the Jefferson Medical College in Philadelphia, from which he graduated in 1899.

Following graduation he practiced medicine for a few months near Grifton and for a short while at Vanceboro, North Carolina. He then established himself in Greenville, where he continued to practice until his death. He always maintained a keen interest in civic affairs, serving both as a city alderman and as a member of the Selective Service Board during the World War. From 1926 until his death he served with distinction as college physician to Eastern Carolina Teachers College. Dr. Nobles was a director of the National Bank of Greenville and engaged in extensive farming operations.

He was married in 1911 to Miss Argen Hardy. He is survived by his wife and children: Mrs. Everett Huggins of Wilmington, Mr. J. E. Nobles, Jr., and Miss Lucy Nobles of Greenville.

Throughout his professional career Dr. Nobles maintained an active interest in the advances of medicine through continued wide reading and through faithful attendance at medical meetings. He was devoted to the Pitt County Medical Society, and once served as President of this organization. He was an honorary member of the North Carolina Medical Society and a Fellow of the American Medical Association.

Dr. Nobles was a man of prepossessing appearance, meticulous in dress and speech. His life was one of simplicity, in which the fundamental values of honesty, sincerity and frankness were recognized by all. To know Dr. Nobles was to like and admire him. His acquaintances in Pitt County were probably more extensive than those of any of his contemporaries. In his passing his family, the medical profession, and the community lose a valued father, husband, physician and citizen.

Therefore be it resolved that these expressions be submitted to the family, the **North Carolina Medical Journal** and the daily papers of Greenville, and be recorded in the minutes of the Pitt County Medical and Dental Society.

T. G. Basnight,
M. T. Frizzelle,
F. P. Brooks,
Resolution Committee.

ANNOUNCEMENT FROM THE PHYSICIANS CASUALTY ASSOCIATION

"In these days when we are all confronted with a question of shortages in various commodities and an increase in the price of those obtainable, we are happy to announce that not only will we continue to carry our policyholders at no increase in the cost of their accident and health insurance, but we adopted a resolution to the effect that there shall be no restriction under our policies by reason of Army, Navy or Marine Service, irrespective of where such Service may take the policyholder.